THE

SOUTHERN AGRICULTURIST.

AUGUST, 1832.

PART I.

ORIGINAL CORRESPONDENCE.

ART. LXIII.—*Sketch of the life of the late* ELI WHITNEY, *with some Remarks on the invention of the Saw-Gin; by* S.

Look at this table of the export of cotton from these United States, and the quantity consumed within its limits:

	Bales.
Exported from 1st Oct. 1830 to 1st Oct. 1831, ...	772,733
Consumed in the non-growing Cotton States, and in the hands of the Manufacturers, ...	182,142
Total,.....	954,875
Of which the roller ginned Cotton may be estimated at, ...	27,901
The saw, or Whitney ginned, at.....	926,974
Total,.....	954,875

Then look at the following extract from an article in the Treaty of Commerce with Great-Britain made in the year 1793, by John Jay, during the enlightened and virtuous administration of Washington:

"Provided always, that the said American vessels do carry 'and land their cargoes in the United States only, it being ex- 'pressly agreed and declared, that during the continuance of 'this article, the United States will prohibit and restrain the 'carrying any molasses, sugar, coffee, cocoa, or *cotton*, in Ame-

'rican vessels, either from his majesty's islands, or *from* the 'United States to any part of the world, except the United 'States, reasonable sea stores excepted."*

What a contrast do the two not present! And what higher evidence could be wanted to prove the fact; that the culture of cotton in this country must have been next to unknown, or if otherwise, as an article of commerce, it must have been considered of very trivial importance, that its exportation from these States should have been almost spontaneously totally renounced? Surely causes of no ordinary nature must have concatenated to produce so rapid and vast a growth and increase. And to which of them can be ascribed more importance than the invention and introduction of Whitney's gin? It is the only machine yet devised by the ingenuity of man, which has been found fully adequate to the desired purpose of separating the green seed or upland cotton (which comprises so very large a proportion of the cotton enumerated in the foreging table) from its stubborn adhesion and tenacity to its seed. It is true, that this description of cotton *may* be separated from its seed by rollers in the same manner that the black-seed or sea-island is; but the process is so tedious and troublesome, that if no more efficient a method of performing the operation had been devised, the cultivation of cotton never could have reached any thing like its present enormous extent, either in this country or the East-Indies, into which latter, the introduction of this admirable and simple machine has not only caused a proportionate augmentation in the growth of cotton, but so materially improved its quality, as to be raising up a very formidable competition against ourselves.

Has the memory of its ingenious inventor, this benefactor of his country and of mankind, who has done for agriculture and commerce, what Arkwright did for manufactures, yet received any token of regard, or been awarded the commonest tribute of respect? The following humble attempt to rescue his memory from unmerited oblivion and ingratitude, may perhaps not prove altogether unacceptable, and may possibly serve as an incitement to call into

* Although this Article was in the original treaty, it was not ratified by the Senate.—*Ed. So. Agr.*

action some abler pen, with better means of collecting the necessary information and materials for the purpose.

The details which follow are wholly derived from memory unassisted by note or memorandum of any kind; but they will be found substantially correct. That which took place anterior to May, 1799, when the first of Mr. Whitney's gins was put into operation, was derived from a much esteemed and lamented friend, who was the family physician and intimate friend of Mr. Phineas Miller, and that of subsequent date occured under the eye, or to the knowledge of the writer of this sketch.

Mr. Phineas Miller married the widow of our much distinguished and highly appreciated revolutionary general, Nathaniel Greene; and having the settlement and adjustment of the very intricate and involved concerns of the estate, originating from personal responsibilities incurred by Gen. Greene, whilst in command of the southern army; a well grounded knowledge of the law was rendered next to indispensable to Mr. Miller, who, by intense study and powerful genius, soon acquired it.

Georgia, at that time being comparatively a new State, opened a field to the enterprize of young men coming forward into life. Accordingly, Mr. Eli Whitney, who, if not a relation was a most particular friend of Mr. Miller, either proposed himself, or was invited, to come on to that State, reside with Mr. Miller, use his law library, and receive from him all needful instruction short of the court practice, which might afterwards easily be acquired in the office of an able practising attorney.

Mr. Whitney accordingly came on to the then residence of Mr. Miller, which was at Mulberry Grove, the plantation presented by the State of Georgia to Gen. Greene, in acknowledgement of his revolutionary services, situated on Savannah River, about ten or twelve miles above Savannah.

The dry study of the law did not happen to be at all congenial to the habits or inclination of Mr. Whitney, and his advancement in it was, as a consequence proportionately limited. His genius seemed to have a decided mechanical turn; as (in the New-England custom) he could not rest without whitling sticks, or unless when executing some ingenious little mechanical contrivance for Mrs. Miller. It was customary with Mr. Miller, almost always on his

return from absence on business, or his walks through his plantation, to make inquiry of Mr. Whitney, touching his progress in his law studies. One day in going through his plantation, after the pods of the cotton had begun to open or expand, he plucked several of the green seed kind, which he had planted for an experiment, and in separating the cotton from its seed with his fingers, noticed the very strong adhesion and the consequent great difficulty in separating and detaching them. After effecting the object, however, with a small portion, he could not but admire the admirable whiteness of the colour and the beautiful fineness and softness of the staple.

It may not be irrelevant here to remark, in way of explanation to those unacquainted with the circumstances, that owing to some thing in the atmosphere or the climate, the green seed or upland cotton planted in the swamps near the sea-board, or in the neighbourhood of the sea-coast, most generally assumes a finer and whiter, although not so strong a staple, as the same kind of seed planted in the interior. And it may be further necessary to add, that many attempts had been made in the interior of Georgia and South-Carolina, to gin out the green seed cotton by rollers in the same way that the black seed cotton (which is quite easily separated from its seed) was ginned; but the operation was so tedious and inefficient as very materially to check the cultivation of this description of cotton. Mr. Miller, whose imagination was fertile and his disposition most persevering—was, in his solitary walk home, revolving in his mind the best expedient to remedy the difficulty in question, but all unavailingly.

Arrived at home, pondering over the subject, with the cotton still in his hands, he was making his accustomed inquiries of Mr. Whitney as to his progress in his law studies, and the answers proving quite unsatisfactory, he somewhat petulantly remarked—"Mr. Whitney, the natu-'ral turn of your mind can never lead you to eminence in the 'profession of the law. Its bent seems to be decidedly to-'wards mechanics—now Sir, (throwing at the same time 'on the table, the seed cotton he held in his hands) if you, 'from the possession of so much mechanical talent, can 'devise a short, cheap and efficient process for separating 'that cotton from its seed, you need desire no better for-'tune than it will make you, nor to render a more effective

'service to your country." Mr. Whitney, with the innate modesty and diffidence, most generally the companions of true genius, after an attentive observation of a few minutes, "hoped he might be able to accomplish it." Mr. Miller, then, without any hesitation, offered to be at any reasonable expense to test the experiment for the exclusive benefit of Mr. Whitney; but he declined the undertaking, unless that, if it succeeded, Mr. Miller should be one-half interested in any advantages which might accrue from such successful result. These preliminaries arranged, Mr. Whitney provided himself with the requisite tools and shut himself up in his room, from which it was found difficult to abstract him, even to take his meals. Inquiry would naturally be made of him whenever he did shew himself of the prospect of his success, which either was met with silence or with an evasive or equivocal reply. The inquiry became the more importunate on the part of Mr. and Mrs. Miller, when he seemed to evince a depression of spirits; and he at last confessed that he had at the very outset overcome every difficulty but one, which, though apparently trifling in itself, had perplexed and worried him excessively. They then insisted on his bringing his unfinished model down stairs, and it was placed on the dining table. It consisted of a wooden cylinder, similar to the barrel of an organ, with bent teeth inserted in straight rows, between which thin slats of iron were placed forming narrow groves through which the teeth on the cylinder could revolve, thereby tearing off the cotton from the seed, which dropped below. This cotton, however, accumulated on these teeth and clogged them so much as to prevent their passage between the slats. This was the difficulty now to be overcome. Whilst in deep consultation as to the remedy, Mrs. Miller, in a laughing manner remarked, "What! allow such a trifle as that worry you? Trust to a woman's wit for the cure, and turn the cylinder," whilst she, at the same time, seized the hearth brush, perfectly unconscious that what she was doing in playfulness to relieve the chagrin of Mr. Whitney, was to result in so completely overcoming the difficulty in question. The application of the brush, however, did not produce the desired purpose; but Mr. Whitney suddenly exclaimed, "Thank you for the hint! I have it now." He carried back his model, and by adding another cylinder, with a reversed motion and increased

velocity, with short and stiff hog's bristles, operating upon the hooks or teeth, the cotton was thrown off to a considerable distance, and fell in small downy flakes, rivaling in whiteness and beauty of descent, the purest of snow or gossamer.

Here started into existence this beautiful and simple machine, which like the steam-engine of Watt, the ingenuity of man, with all subsequent experience, has not been able materially to improve in any one point. How many millions have not its operation served to support in the ways of agriculture, navigation, manufactures and commerce. What value has it not imparted to lands that without it would have been but of little or no value! What gloomy wildernesses has it not laid prostrate to substitute the abode of civilized man for the haunt of the prowling beast of prey, or of man so little advanced beyond! How great should not have been the reward of this benefactor of his species? With what pride should not his memory have been hailed by his contemporaries and countrymen?

The nature of the reward he received will be found in the following detail, and the respect which has been shewn to his memory, is best depicted in the necessity of this present feeble attempt to rescue it from next to total oblivion.

The principle adopted having so completely answered the desired purpose. Mr. Whitney proceeded to the North to have more perfect models prepared, and to secure the patent right in the names of Miller & Whitney, which was accordingly done. The experiment was there renewed with different cylinders, the one with the bent teeth before described, and the other with annular saws, as Mr. Whitney so termed them. His friends, among the number of whom was Mr. Hillhouse, (United States Senator from Connecticut) seemed to be of opinion that the cotton ginned by the former, (the bent teeth) had a better appearance than that ginned by the latter. The first large gin set into operation by horse-power was accordingly made with the bent teeth; and if the writer of this sketch is not misinformed, it is still in existence at Mulberry Grove. But Mr. Whitney, himself, from greater mechanical knowledge, or some other unknown cause, deposited in the patent office the model with the annular saws.

The gin-house and horse geering at Mulberry Grove being completed, and the performance of the gin surpass-

ing the most sanguine expectation. Fortune seemed to throw open to view her brightest vista, as the reward of such meritorious ingenuity, and the liberal patronage that called its fruit into existence. A grand fete was accordingly given at Mulberry Grove, in celebration of the first operation of this ingeneous mechanical contrivance. It took place about the middle of May, 1799. Not one of the gentlemen, who attended, was permitted to enter inside of the gin-house; but ladies were indiscriminately admitted, and were each furnished with a flock of the beautiful fleece to distribute, as specimens to their female attendants outside.

The fame of the gin, and the cotton it produced, spread most rapidly, and numerous applications were made for the purchace of patent rights, which were declined at the time, from the design of the proprietors, to set up their gins in all the sections affording a sufficiency of cotton, and to gin the same out upon a fair and moderate toll: for them a most unfortunate design, as the result proved.

Whatever precautions had been used to veil their secret, either from the treachery of the workmen engaged, or some other means, the principle employed, and the bent teeth used, leaked out. It occured to an ingenious mechanic at, or in the neighbourhood of Waynesborough, in Georgia, ignorant that Mr. Whitney had ever used the annular saws, or had deposited a model of that description to secure his patent right, and who either believed or pretended to believe, (so little was the law of patents in the Southern States at that time understood) that if Miller & Whitney used bent teeth on their cylinders, it was no infringement of their rights to use, in their stead, serrated sheet iron. He accordingly made a gin exactly similar to Miller & Whitney's with the foregoing exception, and it was set into successful operation by a store-keeper at Waynesborough, (if rightly recollected) of the name of Carter, who purchased the cotton in the seed from the neigbouring planters. Before Miller & Whitney could bring the infringers of their patent before the Federal Court, several other gins were made and put into operation, five or six of which were located at Augusta. Suits were brought against all infractors, excepting one, who, being connected with the particular friends of the parties, and stating his ignorance of any invasion of their rights, and

his willingness if they substantiate it, to purchase their patent at the highest rate, was exempted.

He was, nevertheless, supœnaed as a witness against the other infractors. The causes came on before the Federal Court, sitting in Savannah, and there appeared no possible means of the infractors escaping the penalty of the law. In the examination of the witness just above alluded to, he was asked if he himself had not used one of the gins in question, which he of course could not deny. He was next asked how he could, as a man of intelligence, set so bad an example in the violation of the rights of others? He replied, he was unconscious of having done so, as previous to purchasing and using his gin, he had examined the law, that he had simply bought and used it, and not devised, made and sold it. The book, as a matter of course, was called for, and the law was found to read—"devise, make, sell *and* use," requiring the perpetration of the whole together to constitute the offence. The judge, after an attentive collation and examination of all the copies of the law he could find, however, reluctantly, he had no alternative but to non-suit the plaintiff, and to send back the law to be amended at the sext session of Congress, by the substitution of the important monysyllable "or," for that of "and." By what slender threads the fortunes and hopes of men are suspended!

This trial could not possibly have taken place earlier than 1800 or 1801; and does it not become a matter of surprise how a clerkly or typographical error of this kind should so long have escaped the keen scrutiny and investigation of legal research? Or may it not tend to shew how few, or if any, trials had previously taken place under the patent law?

As, by the practice of the Courts in those days, the new trial could not be brought to the first term; considerably over twelve months must have elapsed before the infractors could be brought to a second trial under the amended act. In this interval so many of the gins had got into operation, it become no easy matter to make up the needful juries of trial, under the pretext or excise of direct or indirect interest with the parties to be brought before the Court: and, of course, the strong influence of public opinion and interest, opposed no trifling impediment in the way of justice. It also very unfortunately happened for Miller &

Whitney, that a person about that time emigrated from Ireland to Savannah, who had been in a cotton manufactory, who testified he had seen there in operation a machine very similar to the cotton-gin, which was called a devil or teaser, or some such like name, used to take the moats and dirt out of the cotton: and his assertion received no small degree of corroboration from other persons from Lancashire, in England.

This testimony was taken down in writing from the different parties and not a little relied upon for the defence. At the trial which took place at Louisville, Georgia, in the Federal Circuit Court, the writer of this sketch was present. Mr. Whitney entered the Court with a small package, enveloped in a silk handkerchief, which had the appearance of containing books, this he carefully deposited under the court-table. The testimony above alluded to being read, it had the semblance of being conclusive in its effect. When it became necessary to rebut it to the Court, Mr. Whitney claimed the privilege, which was granted, of doing it, as being best calculated to give the necessary mechanical explanations. He took his package from under the table, and opening the handkerchief, presented to view an exquisitely beautiful model of his gin about fourteen or fifteen inches in length, with several handfuls of seed-cotton. He handed both up to the judge, and spreading out the silk handkerchief to prevent the escape of the ginned cotton, desired the judge to turn the crank, which he seemed to do with great delight, and in a very few seconds the cotton separated from the seed, was gathered up and pressed together in the hand. Mr. Whitney then inquired of the judge and jury if it was not in that state the cotton was exported for the purpose of manufacture either in England or Ireland? which being assented to; he handed the ginned cotton to the judge, requesting him to strive and force the cotton again between the slats, which it was found impossible to do without breaking the model all to pieces. Thus by the most conclusive occular demonstration, he proved to the satisfaction of every one present, that the machine used in Europe could have no sort of affinity, let alone identity, with his invention. But all availed him nought. After vast expenditure of money, waste of time, and harrassing

attention, in endeavouring to obtain through the medium of the law redress and remuneration, he hopelessly abandoned the pursuit; nor to this day has he or his representatives, to the knowledge of the writer of this sketch, ever received compensation or reward from any other State than that of South-Carolina, which paid him $50,000 for the use of his improvement within its limits. Notwithstanding, the States of Georgia, Louisiana, Tennessee, Mississippi, Alabama, North-Carolina, and even Virginia, have reaped so rich a harvest from, and profited so enormously by his ingenuity and invention.

The first cotton prepared by Miller & Whitney's gin, consisted of from fifteen to twenty bales. So little was known of its comparative value with the sea-island cotton, that no price could be affixed to it; but it was generally thought, at the time, to be worth much more than the sea-island from its superior whiteness, cleanness, and fineness of staple. Meins & Mackay, of Savannah, at the time the principal European importing merchants, agreed to make an advance on the cotton and consign it to their correspondents in London, Messrs. Simpson & Davidson. This took place in the winter of 1799 or 1800. Until the report was received from the manufacturers in England, how hope and expectation revelled in the anticipation of the great and enhanced value of this description of cotton! What then must have been the disappointment and mortification, when the report was received, stating that every attempt to spin it by the machinery then in use had proved abortive, and no other reason could be assigned for it, than that the staple of the cotton appeared to be doubled or bowed, like hatter's fur. From that circumstance it derived the name, which it still retains, of bowed cotton.

The idea of further using the gin was for a while abandoned, and it was considered a complete failure. However, after the lapse of some months, letters were received at Savannah, stating that a spinner had discovered a new mode for overcoming the former difficulties, and that cotton ginned in this manner could be made generally useful and would become a favourite cotton; but never could compete with the sea-island cotton in point of price, or usefulness for the *finer* fabrics or manufactures. Experience has tested the correctness of the remark; and new spinning

mills adapted to this description of cotton, have rapidly extended its consumption and consequent growth.

Mr. Whitney's mechanical ingenuity was afterwards employed in the service of the United States in the armories at Harper's Ferry, in Virginia; and at New-Haven, (Con.) where, by his contrivance, the various parts of gun-locks were made so exactly to correspond, that, in the event of any one part of the lock getting broke or failing, the substitute to replace it, might be promiscuously taken from the bag or box, in which such corresponding part was deposited, and thus an immensity of expense and time, in the repairs was spared to the public. His ingenuity and talent have only been underrated from the simplicity which produced such admirable results; but this is not to be wondered at, when even the perfected works of his great creator, which meet us at every turn, experience a similar treatment from the self-same cause.

Georgia, January, 1832.

ART. LXIV.—*On the proper time for applying the long-water to Rice*; *by* Q. E. D.

One of your correspondents over the signature of "Z," has given some directions for the use of the joint-water on rice, and refrains from saying any thing of the long-water, from the conviction, that its use and application is settled and understood. In this opinion "Z" is mistaken, there is no part of the process more susceptible of mismanagement, and none in which it oftener occurs. Much injury results to the crop from the injudicious use of this water, which is seldom discovered as the owner is usually absent when it shows itself, and the owner is not sufficiently attentive to note its effects. This water is often put on as early as the appearance of the third or fourth leaf, before the plant has any tillers, and before the hoe has performed its duty; and all this is done under the full conviction, that ample time will be allowed (after this water is drawn off)

for the plant to recover its strength and tiller abundantly, previous to the use of the joint-water. In the hands of an experienced planter, this will sometimes happen, but the practice is hazardous and should not be encouraged, especially as it interrupts a process upon which the plant is at this moment about to enter. The tillers are put out until the fourth leaf, and in proportion to the number of these shoots will the crop be large or the reverse, and of course nothing should be done, which is calculated to diminish their number or retard their growth. The plant is at this time tender and delicate, and is only capable of doing that which we see it accomplish, when let alone, viz. the putting forth shoots. When this process is stopped, and the rice is stimulated, it becomes stretched and weakened, and literally "out grows" its strength, exhibiting a small and meagre stock, and changes the verdant green for which it is so remarkable for a straw or yellow colour, indicating disease and debility. These are not the only objections we have to the early use of this water. It is true, that the long interval which ensues between this water and the joint-water gives the plant time to recruit, but all this we look upon as time lost, because if water had not been used too early, no derangement would have taken place in the system, no intermission in its progress to maturity would have been offered, no recruiting would have been required, and the plant would have continued to grow and thrive to the end of the chapter.

It has been often said that the best physicians are those, who instead of taking the whole business of cure out of nature's hands, narrowly watch the course she points out for the removal of disease and follows her; with equal truth it may be affirmed, that the most successful planter will be him, who having no theory to support, keeps his eye steadily fixed on the plant he cultivates, watches its growth, finds out its necessities, and supplies its wants without interfering with its habits. The question now recurs when is the long-water to be put on? To the practised eye of the intelligent rice-planter, this question presents no difficulty; wait until the plant has three or four tillers, and has attained considerable size and strength; wait until the plant exhibits by some slight change of colour, that it is time to change the mode of culture from dry to wet. Now put the water on, and do not allow custom or

habit to prevail on you to continue it more than twelve days, and we think ten would be better. From this mode of cultivation numerous advantages result under it, the rice is always green and always healthy; it is never sickens and of course never requires time to convalesce; and under this management, it will not be driven from its course, but will continue to put out shoots even while in the water, and seldom fails to make an abundant crop. Water, Mr. Editor, in the rice-crop, is either a good or an evil, as we use or abuse it; and I never see it injudiciously applied, but the story of the man "who was well, but wished to be better, went to the doctor for advice and died," occurs to me.—Fortunately for us, the rice-plant is very hardy and will bear much ill treatment without material injury, for certainly there is no portion of our agriculture which is less understood, and none which is so often committed to the hands of ignorant and thoughtless men.

These observations might be extended to a great length, Mr. Editor, but my object is merely to attract the attention of planters to the subject, especially as I find some among them are impressed with the idea of this watering being thoroughly understood and settled.

I remain your sincere well wisher.

Q. E. D.

Charleston, June 16, 1832.

ART. LXV.—*Answers to observations and queries made by Tyro, relative to the management of Hogs, &c.; by* W. A. G.

"Columbia County, (Geo.) April 1, 1832.

Dear Sir,—In the February Number of the Southern Agriculturist, I see some questions asked over the signature of Tyro, relative to the "best method of managing sows, from two weeks before they pig, until the pigs can crack corn: also the most economical mode of raising hogs;

and at what time it is best to plant cotton in the upper country." I will attempt to offer a few remarks on those subjects, though I cannot hope that they will be either new or instructing.

The sows on this plantation, two or three weeks before they pig, are confined to a pasture exclusively devoted to their use. The pasture is situated on the margin of a creek and through it passes a small stream of water; the ground is generally low and flat, but a portion of it is sufficiently dry to afford them places for making their beds. In this pasture the sows remain until the pigs are about a month old. In the mean time, they are well fed on boiled corn, pumkins, &c. a sow with a large litter of pigs sometimes finds it difficult to nurse them well, no matter how well she may be supplied with food. When this is the case, she should be aided by supplying the pigs with gruel, which as soon as they become acquainted with, they will eat with a great *goût*.

When the pigs have arrived at the age mentioned above, they together with the sows are removed from the pasture, and become a portion of what I call my out hogs. What I shall say of my out hogs, will comprise all that I have to say about the most economical mode of raising them. A post and rail-pen has been constructed for those hogs in which they are penned every night upon a good litter of leaves. So accustomed are they to their pen, that it is seldom one absents himself. They are fed night and morning on boiled corn, from troughs constructed on the plan of those in use on the Orange Farm near Baltimore. The hog-pen has a division in it for the small hogs that have arrived from the sow pasture. A small hole admits them to their department, where they are fed with boiled corn liberally. My hogs have an extensive *range*, partly swamp and partly up-land. Hogs treated in this manner will be fit for the knife at a year old, and will weigh from one hundred to one hundred and fifty pounds. This plan of raising hogs I do not say is the very best that can be pursued; but I am confident that it is far superior to the system in general practice, namely, roaming at large night and day, by which they are exposed to "disasters from hunger, poverty and assassination."

I do not plant cotton so soon as my neighbours do generally. I commence planting about the 10th or 12th of

April, and finish about the 25th. My experience justifies the opinion that cotton planted the 1st of April, hardly ever does so well. With regard to long litter being a good manure for cotton, I have had no great experience, though I have tried it partially; most of the manure that has been made on this plantation, has been applied to the corn crops, but I know of no reason why long litter will not answer as well for cotton as for corn. I am about to try it on an extensive scale this year. All the corn stalks from last year's crop, together with large quantities of leaves and swamp-mud, were carted into the cow-pen, in which the the cows were penned nightly, until the 1st of November; after that time, until the 1st of January, they never left the pen, only to be driven to water. I suppose, Sir, that I have manured from fifteen to twenty acres of ground with those materials; placing as much as a yoke of oxen could conveniently draw on twenty feet square. This ground I intend to plant in cotton. If any thing should occur to render it a crop worthy of interest, I will freely state it.

Your's, &c. W. A. G.

ART. LXVI.—*On the Culture of Rhubarb*; *by* GIDEON B. SMITH.

"Baltimore, April 14, 1832.

Dear Sir,—The Rhubarb is the simplest thing possible to cultivate. Nature informs us, by example, that the crown of the root should be set about one inch under ground—this being its situation, (after the foliage disappears) in winter. For culinary purposes, when it is cultivated for the petioles, or leaf-stalks, and of course abundance of them and large ones too, are required, it should have a very rich soil, neither high nor low ground, but a medium site, somewhat shady. If made rich with stable-manure well rotted, it is best. Whenever the leaf-stalks are large enough, say from eight inches to a foot or more long, they may be cut for use.

Cut them close to the ground, strip off the leaf, and the thin skin from the stem, cut the stem into pieces half an inch long, and stew them as you would gooseberries for tarts. They require a large quantity of sugar, (about their weight,) before they are stewed—it is inconceiveable how much the acid and flavour are improved by stewing.—When stewed they are to be made into tarts in the same manner that other green fruits are.

Mrs. Smith always gathers all the leaf-stalks not wanted for present use, prepares and puts them up as a conserve for winter use, for which purpose the rhubarb has no equal. After the leaf stalks are prepared, (peeled and cut) she makes a syrup of as much sugar, (good brown) by weight as she has rhubarb, and gently stews the rhubarb in it till done; when cool it is put away in stone or glass jars for use.

In cutting the leaf stalks, take only the outer large leaves, leaving the young and small ones on the plant. I never force or blanch rhubarb, it injures the flavour materially; or at least it spoils it for my use.

I ought to have said something of the culture of the plant. After it is set in rich ground nothing more is necessary to be done. The plant being set two feet apart each way will smother the weeds. It would be well, however, to spade the ground occasionally, to secure the absorption of moisture. The plants last many years, and are capable of being divided every year if desired; in which case, split the roots so as to leave a bud on each division.

This plant is extremely difficult to raise from seed, being very hard to vegetate. It must be sown in February and will require frequent watering, if the weather be dry, in March and April. The plants may be transplanted into their allotted place in the fall or the next spring, and will bear cutting the second year, that is the same season they are transplanted. The plants from which seed is expected must be set in a soil more dry and sandy then those for culinary purposes, as those in the rich soil seldom seed well.

However, highly I estimate the rhubarb for culinary purposes, it has a value far above all price in another respect, to me. I have found the tarts and the conserve made of it a sovereign remedy for *cholera infantum*, or summer complaint in children. My little daughter passed a sum-

mer of her second year in that afflicting disease, barely having life left at the approach of winter. During winter she recovered a little strength, but we were obliged to deny her all fruits and vegetables. With the commencement of warm weather in the next year her complaint returned with redoubled violence and inveteracy, so that on the 5th of July, all hope of saving her had been abandoned. Walking in my garden on the morning of that day, after having just denied her some fruit which the other children were allowed to eat freely, and feeling much pain on account of the appearent cruelty which it was my duty to exercise in denying her the fruit, it occurred to me that I would have a tart made of the rhubarb for her. (Our supply had been so small that we had seldom used it in the family previously.) I immediately cut some leaves and caused the tart to be made. She ate a small piece of it at 12 o'clock, another at 2, and at 3 o'clock an evident change was perceptible in her stools, of which she had previously had from six to twenty a day. After 3 o'clock she had no stool till next morning, when it was natural; the first *natural* one she had had for many months. From that time to this, she has been free from the complaint; or rather, whenever it has occurred, a single piece of the tart or a spoon full of the conserve, has been sufficient to arrest it. We have since used it with all our children, and given it to our neighbours, without a single failure. All children are fond of it. We give the conserve to them on a piece of bread or in any other way. I have used it myself in similar complaints with success—it is a very grateful relish in such cases. Immediately on the discovery of this valuable property in the rhubarb, I sat about making provision for a full supply of plants for my family, and hope never again to be without it. I have also made such arrangements as will enable me to supply roots to those who may want them, next fall. They can be sent to any distance with facility.

I am, Sir, yours, respectfully.

GIDEON B. SMITH.

We strongly recommend the culture of this plant to our readers—there is little or no difficulty in raising it. Our success this year, has been more complete than the last, and we pro-

pose giving an account of the experiment at the close of the season. In the mean time, we refer our readers to what we have already written on the subject in the current volume, page 247. Seeds will be for sale at several of the seed stores in this place next winter.—*Ed. So. Agr.*

ART. LXVII.—*Account of an Agricultural Excursion undertaken by the* EDITOR, *in the Spring of* 1832.

(Continued from page 364.)

In passing from "*Withywood*" to "*Campvere*," after a short ride, we entered into the road leading to Clement's-ferry, and continuing down, passed several rice plantations situated on the same swamp; soon after leaving the last, (Mr. H. Rose's) it is necessary to cross the country and get into another road leading from Clement's-ferry, along the Eastern branch of Cooper-river. The road which connects these two, passes through a track of country thickly wooded with pine, interspersed with a few scattering oaks. It appears to be principally a pine barren and unfit for culture: we, of course, speak only of that part through which our road lay. As soon as the river road is reached, we again turned to the North, and a drive of a few miles brought us to "*Campvere*," the residence of Col. John Bryan, situated on the Eastern branch of Cooper-river.

We had the pleasure of finding Col. Bryan and the other members of his family at home, and were most hospitably received by them. The first afternoon was spent in viewing the shrubbery and inspecting a new and excellent rice-mill which was completed last fall. The next day was devoted to an excursion over the rice-fields: the cold weather had backened the crop very much, and the late heavy falls of rain, accompanied as it was with with cold weather, had proved rather injurious. Although a part had been sown some time, yet it was but partially up, the whole crop was not in, and in consequence of the rains, the hands were employed in listing and bedding the ground for corn, instead of planting the rice crop. We walked over a large portion of

the squares, and were very minute in our inquiries, to which we received very full and satisfactory replies; but as Col. Bryan has consented, at our request, to give a detailed statement of his whole course of culture, we deem it unnecessary to enter into any particulars, as it will be done so much the better by him, and we hope he will be minute in his directions, conscious as we are, that they will prove interesting and valuable, not only to those who have attended to this crop for several years, but more especially to those who are either just commencing, or are situated in those sections of country where the culture has not reached the same degree of perfection.

We are much in want of a treatise on the culture of rice, which may be considered elementary, for although we have published much on the subject, yet all of our writers have started, with the supposition, that much is already known by the reader, and they have generally, merely communicated the common courses of culture, without stating by what rules they are governed, and what alterations they would make in certain contingences to which this crop is exposed every year. In consequence of which, these communications are by many considered defective, for although, no crop among us has had more attention paid it, and the culture of which has been more improved, of late years, yet there is none, for which general directions are so illy adapted. Every operation from the first breaking up of the land to the harvesting of the crop depends on certain contingencies which are apt to vary, and consequently, require variations in the course of management, hence it happens that no directions for the culture of this crop can be implicitly followed, unless these are noticed and guarded against. But as they have not generally been attended to in these several communications the young planter, who relies on them, finds himself unprepared for these emergencies, and consequently either acts in the dark and oftener injures his crop than benefits it, or is obliged to have recourse to some older and more experienced planter. There is no crop which requires more skill and science in its culture than this, and although it has been much more improved than any other, yet, it is far from being perfect. Numerous experiments are still necessary to settle the disputed points, (which are not a few) and there are many practices which are now considered as settled, which, in the course of time, will be

materially altered. It is to supply some of the omissions referred to, by us above, that Col. Bryan, will direct his attention, and he will, therefore, enter into a minuteness of detail, which to many may seem unnecessary, but which we have specially requested of him, knowing as we do, that both his experience and the situation of his plantation will enable him to furnish us with what we have desired in full.

Although we shall not for the reason stated, give the management of the crops on this plantation, yet we cannot leave it without noticing more in detail than we are in the habit of doing, or than we intend generally to do the beautiful order in which we found it, and the general arrangement of the place. Our readers will, we hope, pardon us for giving them a description of "*Campvere*," and a short account of its arrangement.

The public road runs along to the south of the mansion, about a quarter of a mile distant, and in sight. The gates open immediately on it: entering through which, you pass along an avenue of large and beautiful live oaks, seventy-five feet apart each way, which are continued from the gate to the lawn, immediately in front of the house. On either side of this avenue, and distant about thirty or forty feet from the rows of oaks, are hedges of the Cherokee rose, planted on banks, and of considerable height. Beyond these are two small fields of ten acres each, which being kept constantly under culture, have a neat appearance, and add much to the beauty of the whole. Driving through this avenue for a quarter of a mile, you arrive at a lawn, which is almost a square, containing several acres, coated with a thick turf of grass, and studded with large live oak and other trees, the former by far the most numerous. Immediately in front of the avenue, and to the north of the lawn, but partly concealed by some of the oaks, is the mansion, a large two storied wooden edifice, with a piazza on the south front and a portico on the north. To the east of the house forming that side of the square, are a carriage-house, stables, cow-house, &c. whilst the western side is occupied by other offices.

On both branches of Cooper-river, as far up as it is practicable to cultivate rice, the whole of the swamp is cleared, and under culture, so that in passing down them, an almost uninterruped succession of fields and settlements are presented to view. These even in the dreary months of win-

ter present handsome views; but when covered with the rich luxuriant crops of rice, extending from the high land, even to the margin of the of the river, whilst the sloping grounds in the rear are covered with crops of waving corn, potatoes, &c., and the back ground is relieved by the dark masses of wood, which every where meet the eye, and are varied in their shades, by their approach or recess from the river, and the numerous clearings which indent them, forms *un tout ensemble*, which is scarcely excelled in this State, for loveliness and luxurious appearance.

What we have here detailed is common to both branches, and are enjoyed in a greater or less degree, from each plantation. None of the views, however, which we saw, equals that from "*Campvere*," especially when seen from the north portico of the mansion. Immediately at your feet you behold a beautiful shrubbery, tastefully laid out and filled with many choice exotic plants, and a large number of our own beautiful, indigeneous shrubs and trees. Beyond this are seen the corn and rice-fields, the river, and near to it, a new and handsome mill recently erected by Col. Bryan. Extending the view beyond the river, you behold a continuation of rice-fields, for several miles up and down, the whole interrupted but by one small parcel of highland, running down to the river and abruptly terminated by a steep bluff, which gives a variety to the whole. Looking to the west, the first place seen is the "*Hut*," the residence of W. Harleston, Esq, and next to it Bonneau's ferry, which is rendered interesting by the number of passengers crossing, who can be seen as they drive to and from the boats. On the highland, almost immediately opposite, appears the "*Villa*," owned by J. E. Bonneau, Esq. which with its various buildings are fully exposed to view, and presents a handsome appearance. A little higher up the river is seen "*Richmond*," the residence of Mrs. Rutledge. The mansion is placed on a high and commanding hill, crowned with numerous large live oak trees—from the house the ground slopes rapidly to the rice-fields, and presents a beautiful green lawn, here and there relieved by single trees.

Ascending the river, on the same side, and adjoining each other are seen in succession, the fields and buildings of "*Farmfield*," the residence of Thos. Corbet, Esq. "*Bosses*," of N. Harleston, Esq. and "*Hyde-Park*," estate of the late

Isaac Ball. "*Limerick*," situated at the head of this branch, is also partially seen. Following the river down, you behold on the south side "*Longwood*," the residence of Alfred Huger, Esq., and the "*Middleburgh Mills*," and settlement, owned by Jonathan Lucas, Esq. and which adjoins Campvere. To the West are seen the "*Blessing Plantation*," and the "*Hagan*," the residence of Major John Huger, situated at the "T" as the fork of the river is called. Owing to some wood land, which remains still uncleared, the plantations situateds on French quarter creek, cannot be seen. Extending the view beyond the "*Hagan*," the plantation of Col. William A. Carson, distant about twelve miles, is seen with its mills, Houses, &c.

After viewing the landscape, which we have endeavoured to sketch, the visiter will not fail to descend and examine the shrubbery, which we have adverted to, but which deserves more than the passing notice we have bestowed. This is the largest we have seen in the Southern States, occupying as it does about five acres of ground. The whole has been designed and executed under the direction of Mrs. Bryan, to whose taste and skill we bear most willing testimony. It is situated, principally on the north front of the house, but also extends around, so as to embrace both the east and the west ends: from the lawn in front of the house it is separated by a light open railing. A gate on either side of the house permits ingress and egress to and from it. Descending from the steps of the portico, you arrive at an oval bed which is kept in grass, and on which there are a few artificial baskets surrounding some exotics. In several other parts of the shrubbery, these baskets are also to be met with. In front of this is a short avenue of poplars, which form the only strait path in the whole. The rest of the ground is laid out in what is termed the *natural* or landscape style of ornamental gardening. The several walks intersect each other in different parts, some gently winding through the shrubbery towards the lower part, whilst others are made to descend by flights of steps.—The different compartments are filled with exotic and native shrubs, judiciously mingled, whilst honey-suckles, woodbines, and other vines are not wanting to add interest to the whole. Nor is the beautiful family of roses omitted. In several places the visiter meets with them, and they are

to be found also, collected in a rosary, near the northern boundary of the shrubbery, and at the foot of the hill.

The eastern part is not yet completed, but is progressing, and a large portion of it is already planted. On a high and commanding hill, it is proposed to erect a prospect tower, which will not only add much to the appearance of the whole, but afford a more extended and varied view. At the bottom of this hill, extending more towards the west is a lake, which is now a handsome appendage, but will be much more so, when it is adorned with a small boat with sails and flags, which we understand will in the course of time be added. To all lakes so situated as to be seen from the house a boat should be considered as a necessary appendage, and if she is moored near the centre with a long chain or rope, and the sails hoisted, she will continue sailing about the whole time, and add much to the beauty of the scenery.

In the formation of her shrubbery, Mrs. Bryan has employed twenty-nine varieties of indigenous, and upwards of forty varieties of exotic shrubs and vines, and is constantly adding to her collection. As the family reside here only during the winter and spring months, her chief desire has been to have the shrubbery composed of evergreens, or of such decidious trees as flowered early in the spring. Trees are admitted very sparingly, lest when they grow up, any part of the prospect should be hid, we think, however, some of the more elegant of our evergreens might be admitted, without destroying the beauty of any part of the scenery. Some of the more open spaces are ornamented with flowers—the edges of several of the walks are bordered with them also. The kitchen garden we did not examine, it is in a separate enclosure, containing about two acres. A road leading to the rice-field and mill runs between the shrubbery and it.

Should the visiter return into the house, he will find full employment for many a rainy day, independent of the social intercourse of the family, in inspecting the numerous prints which decorate the walls of each of the setting rooms, and when these have failed him, a well-stored library is open to his perusal.

The rice lands of Cooper-river are an extremely light vegetable mould, of considerable depth, resting on a clay substratum, the grain produced on it, although good, does not rank as of the very first quality, owing to what is term-

ed its chalkiness, which is a small white mealy spot on the grain, with the exception of this, it is considered as prime. On some plantations this is scarcely apparent, whilst on others it is very much so.

The average crops on Cooper-river, exceeds two barrels and a half of 600lbs. each per acre; three barrels is considered as good, but a still greater quantity has been repeatedly made on particular plantations. The highlands adjoining the rice-fields are generally poor, and until a few years back were but little cultivated, the consequence of which was, that most of the planters were obliged to purchase provisions for their plantations. A different policy has of late been adopted; these lands have by the aid of manure been rendered productive, and there are now many planters who never purchase a bushel of corn for the use of their plantations.

ART. LXVIII.—*Transactions of the Horticultural Society of Charleston.*

The anniversary of the Horticultural Society was celebrated on the 11th of July. According to previous arrangement, the Society met at 5 o'clock in the room usually occupied by them, whilst the spacious new room recently erected by Mr. Seyle, was appropriated to the reception of the company, and delivery of the address, and was handsomely decorated for the occasion with beautiful boquets of flowers, and rare plants in boxes and pots. After the transaction of some preliminary business, the Society proceeded to the election of Officers, when the following gentlemen were elected. Mr. Horry having previously intimated a wish not to be re-elected.

Judge WILLIAM JOHNSON, *President.*
Dr. JOSEPH JOHNSON, *Vice-President.*
Dr. H. R. FROST, *Corresponding Secretary.*
J. D. LEGARE, *Recording Secretary.*
A. WINTHROP, *Treasurer.*
Rev. J. BACHMAN, *Orator for the next Anniversary.*

Standing Committee—Rev. J. Bachman, Dr. I. A. Johnson, R. Hume, Joel R. Poinsett, James Cuthbert, Dr. James Moultrie, and the Officers of the Society *ex-officio*.

At six o'clock the Society preceded by the President and Orator moved in procession to the new building, where a numerous company had assembled and were enjoying the fine display of flowers, plants and fruits exhibited on tables extending from the upper to the lower end of the room. The bustle consequent on the entrance of the Society having subsided, Dr. S. H. Dickson, rose and delivered a beautifully chaste and classical address, which was listened to by the numerous auditors, with profound attention. The Society having directed it to be published in the Agriculturist, we refrain from making any further comments on it here. After the delivery of the address, the President made a few preliminary observations, and proceeded to announce the award of premiums. It was the intention of the Society to have delivered the medals at this exhibition, but a long continuance of head winds prevented the vessel on board of which they were, from arriving in time, and, consequently, the names only of those were announced to whom they had been awarded, and to whom they would be delivered on their arrival.

This ceremony having been gone through with, the Society adjourned to the room at first occupied by them, when, on motion, it was

Resolved, That the thanks of this Society be tendered to Dr. Dickson, for his elegant and classical Address, and that a copy be requested for publication.

A Committee was thereupon appointed to wait on Dr. Dickson, who reported in the course of the evening, that he had consented to its publication. The Society continued in session until a late hour and then partook of an elegant collection of fruits, which the several members had contributed for the occasion.

Although this is not the first exhibition, yet it is the first anniversary which the Society has celebrated, and if they had cause to be gratified at the interesting display of public feeling in their favour, at their exhibition in May last, much greater had they now. Not only was there a greater display of plants, flowers, &c. but the company was far more numerous than had ever assembled on such an occasion, and it must have been pleasing to the members to have witnessed the general satisfaction which was depicted on every countenance. Although the Society had made as it was supposed ample provision for the comfort of all the ladies who might attend, yet a large number were unable to obtain seats, and compelled to remain standing during the whole time.

Immediately in front of the stage (on which were the Orator, President and Vice-President, whilst the members were arranged around on each side) was a very large *Cactus triangularis*, in a box, four feet high, and extending three feet in breadth as it stood fastened to its trellis; from this, tables continued down through the centre of the room, on which were displayed numerous boquets and single flowers, as well as rare

plants in boxes and jars—fruits and vegetables. These were most tastefully arranged by some some ladies, who kindly consented to assist the Committee, and to them the Society are much indebted, for the handsome appearance of the room, and the neat arrangement of the whole. A press of business prevented us from bestowing such attention on the exhibition as would enable us to give an account of the beauties of the several plants, and we have to content ourselves, therefore, merely with giving a list of such as were sent.

Plants.

"*Mrs. Schriller* contributed the following plants, some of which were very large, the Jasminum odaratissimum, Aucuba Japonica; Double White Oleander, (Nereum); Double Red do; Double Arabian Jasmine; Begonia argyrostigma, (silver spotted Begonea); Cactus triangularis, Geraniums, and also many cut flowers.

"*Mr. P. Noisette* sent Gloriosa superla; Agapanthus umbellatus, and Heleconia ——, in full bloom; also, the Lawsonia inermis; Hybiscus rosa-sinensis; Vitex Agnus Castus; Heliotropium Peruvianum; Lagerstræmia Judica; Gardenia Florida; Illicium Parviflorum; Thalia dealbata; Pavonia spinifex; Calicarpa Americana; Clethra alnifolia; Cephalanthus occidentalis; Lythrum lanceolatum; Yucca aloifolia; Gordonia lasianthus; Franklinia pubens."

From Mr. F. Dupont, were received a beautiful plant of the Agapanthus umbellatus, (a new variety) in full bloom, also the Hæmanthus Albiflorus.

Numerous boquets were furnished by Mrs. Cochran, Mrs. Davis, Mrs. Buchman, Mrs. William Johnson, and Mrs. Smylie. A handsome collection of Dahlias was sent from the garden of James Nicholson, Esq.

Fruits.

"*Nectarines* were sent by Miss Prebble; Peaches by Mr. R. Landreth; Apples by Messrs. J. Michel and P. Noisette. *Grapes*, Chasselas de Fontainbleau, by Dr. Wurdeman and Mr. Fillette; Musk Chasselas by Dr. Dickson. *Water-melons* by Mrs. Dr. Porcher, and Mr. J. D. Legare. *Musk-melons*, Green Citron and White Spanish, by Mr. J. Michel. Winter-melon of the Levant, and Musk-melon from the South of Russia, by Mr. J. D. Legare; English *Mulberries*, by T. F. Purse."

Vegetables.

"Very fine Long Blood Beets, Orange Carrots and Parsnips were sent by Mr. J. A. Winthrop; Large Mexican Squash, by Mr. P Noisette; Asparagus Beans, by Judge Johnson; Peruvian and Canadian Squashes, by Mr. J. D. Legare."

Some length of time after the conclusion of the Address, the company remained in the hall examining the beautiful flowers and plants on the several tables. Towards the close of the day, when their beauties could no longer be an object of attention and curiosity had been satisfied, the Society directed that the several boquets and cut flowers should be distributed among the ladies, which was done and they they departed, highly gratified, as we hope, with what they had seen and heard.

PART II.

SELECTIONS.

ART. XLIV.—*On belts of Evergreens, as skreens, for the garden, the orchard, vineyard, &c.**

[FROM SILLIMAN'S JOURNAL.]

The *temperature*, in winter, of *every* living vegetable—that is, of some part of it, in which principally resides its vitality, during the season of its least activity—is always *higher* than that of a *dead* vegetable, of the same kind, as is the case also with hybernating animals, in their season of torpidity. The natural temperatures of living things vary, according to their kinds and habitudes. *Trees*, of the class of *evergreens*, in perpetual verdure, constitutionally adapted to life in colder regions, have a *higher temperature of vitality*, than *deciduous trees*. The same sunshine, which, in winter, falls upon the leaves of the leaf-covered branches of an evergreen, and upon the leafless branches of the oak or other deciduous tree, produces widely different effects. As if there was a repulsion between cold and heat, the ascending blaze of a fire cannot be made to come into contact with a bottom of a tea-kettle or boiler, filled with cold water; but will do so when heated up to near boiling, coming nearer and nearer as the temperature of the water is raised.

My supposition is, that the effect of the sun beams is always in proportion to the temperature of the thing on which they fall. If, for example, the sun beams, in winter, fall on a living and a dead human body, I suppose that the living would imbibe more solar heat than the dead. Also, that when the temperature of the open air is at zero and that of a hot bed at 60°, for example, its glazed covering open to the sun—that the rays of the same sun would increase the temperature of the hot bed more than that of the open air; or, that when the temperature of the open air is at zero, and that of a dwelling room, open to the south by a win-

* This paper was written as part of a series entitled the *Country Farmer*, and would have been No. XXIII of a series now in the course of publication in another journal.

dow, is at 60°, indicated by accurate thermometers, both in the shade; that on letting the rays of the sun fall on each, the rise will be greatest in that one which indicated the most heat. This, however, in these cases, cited to make my meaning clear, is theory only, for I never have tried the experiment, although so perfectly easy of trial.* As to the effect on pine leaves and the teakettle, I speak from experience and repeated observation. So, also, as to what is assumed of the different degrees of temperature of *living* and *dead vegetable roots*, in my last number, a reference to which will show the bearing of these remarks upon the true philosophy of scientific agriculture. While the dead branches of the limbs and twigs of the pine tree of the same grove, are seen covered with the ice and the snow of winter, long after its storms, those of the living tree, and its leaves, are as free as in summer. They are even giving out their caloric to the atmosphere, like deep water attempering its severity of cold; while the deciduous trees, from the power of extreme cold, are splitting from their centres, with loud reports, like signal guns.

Where is the farmer, with a grove of evergreens near him, accessable to the "locomotives" of his barn-yarn, who has not seen with what avidity they retire to its friendly shelter, in winter, and with what reluctance they leave it, even after having finished the chewing of the cud, while wanting a new supply for their ruminating functions? And where is the farm, on which this luxury has been procured, by human effort? From necessity, our fathers cut down our groves, and too long perseverence in the first habit of every new country, has made us wasteful in the extreme. For where, also, is the farm, of twenty, thirty or fifty years old, on some one or many of the fields of which, it would not now be desirable to have the destroyed groves of wood restored, either as skreens from the wind, for use as timber, or for ornament? I know of no one, from cold and bleak New-England to Georgia, or from the Atlantic to the Ohio.

The common opinion seems to be, that groves of evergreens are in winter, warmer than those of deciduous trees, only by the greater obstruction they afford to the currents of the air, in winds and storms. Hence so little use has been made of them, either as artificial skreens for the live stock of the farm-yard and the barn, or as a protection for fruit trees, and the orchard, and the garden. I once commenced an experiment of this sort, upon a new farm, by a circular belt of evergreens, on the north of a farm-house, barn, garden, vineyard and orchards, extending around from the north east to the south west; but it failed, by defect of title to the land. Late in the December of life, I reluctantly abandon the hope of such an experiment, but after stating my

* The author's views require to be verified by careful experiments, made under circumstances excluding the influence of extraneous causes.

reasons for the hope of success, I thus invite public attention to due examination of the whole matter. Fruit trees and vines, I know by experience, may thus be skreened from the peltings of the merciless storm and cold, and enjoy a climate, (if I may so say, a local climate,) strangely foreign to the place in which it is produced, and not less strangely congenial to the life and habits of the cultivated products. The live stock of the farm, and the wild game of the forests, choose their haunts with unerring wisdom, according to the seasons, and the heat, and the cold; of the knowledge of which the experienced huntsman, not disdaining to learning from untalking animals, avails himself, now searching the groves of evergreens, or the open woods, or the hill, or dale, as experience shall have taught him. But the hunter is half a savage! Man, civilized, learned, social and communicative, seems less inclined to take lessons from things, than from words, and thus goes on in blind habit; the progress of nations in philosopby seems to be the more tardy, as their advance in literature is more rapid.

Gentlemen of science and fortune, by entering spiritedly into improvements themselves, may do much towards giving new and rightful impulses to the public mind, in every thing connected with agriculture, and the arts and sciences. Some indications of this sort are occasionally to be met with, in various parts of our widely extended country, affording auspicious hopes, yet by far too circumscribed in the sphere of their influence. One reason of this is, that we are, as a people, not yet sufficiently aware of the power, in such matters, of a well conducted medium of communication, by the agency of the press, of which we are too parsimonious in our patronage. In England the matter-of-fact discussions of the *public press*, in relation to *steam navigation*, *canals* and *rail-roads*, bringing philosophy and science into the actual every-day business of life, have done more, in a few years, towards enlightening the public mind, than many ages of folio and quarto book making.

The county of Saratoga, New-York, has been most profusely denuded, as Dr. Johnson would say, of its wood. In passing along its roads last summer, within a few miles of its celebrated mineral springs, there the extreme want of groves of wood, and evidence of the facility with which they might, with a little care, be supplied, were almost every where observable. Little copses, say of the white pine, along the road side, on farms almost naked every where else, had their branches and leaves almost lying on the ground, forming a thicket through which a bird could hardly fly, and a green wall of foliage from twenty to fifty or more feet in height. With such models before their eyes, supremely beautiful, a perfectly natural growth, I know not how it can have escaped these people, to provide such belts of evergreens, as skreens for their orchards, gardens, barn and

farm-yards! They would be singularly beautiful and ornamental, besides being of much use, as well to each farm, as by providing *stopping places* for the winds, thus beautifying and benefiting the whole country, by an amelioration of its climate. In its primitive state, this sandy region whose surface is elegantly diversified, was covered with pines of gigantic stature. With plantations of the oak, chesnut, &c. which would grow rapidly, and some belts of evergreens, as above proposed, both of which are much wanted, these sandy plains and knolls would become again delightful. They have now an aspect of dreariness, which could soon be remedied by correct taste and spirited effort. There are many farms which would be beautiful except for these very features of *unbeautiful nakedness;* some of the proprietors are spirited improvers, on whom I hope these suggestions will not be thrown away.

HORATIO GATES SPAFFORD.

ART. XLV.—*Blind Staggers in Hogs and Horses.*

[FROM THE AMERICAN FARMER.]

Morgan County, (Geo.) June, 1832.

Mr. Smith,—I send you a collection of facts, such as I have seen and heard, with the inferences I have drawn from them: if they should appear to you probable, or even possible, I pray you give them an insertion in the Farmer; perhaps some other person may add to them. I should like, if they are correct, that others should be acquainted with them; if incorrect, I should like to be convinced they are.

Some time ago I purchased, I think, the finest sow and pigs I ever saw. She raised her pigs, and had another litter of two or three weeks old, when one of her ears was cut off, tolerably close; the other ear not marked. On Sunday, 6th of May, I let her and her pigs in the horse lot to eat some loose oats; we had a very rainy spell for some time. Not long after I turned her in the lot it rained very hard; the pigs escaped through the fence and ran to their beds. I saw the old sow, in the hardest of the rain, endeavouring to get out at the bars to follow them; when the rain ceased I went and let her out; she at that time appeared well. On Monday when I came home at midday, my old sow was eating an ear of corn at the yard gate; she attracted my attention from the singularity of her appearance; her

head was turned to one side. I rode up to drive her; instead of running away, she turned round and round my horse, until she fell. By this time my boy came up, and told me she came up apparently well, but suddenly began to go round and round, and that he had thrown her an ear of corn to she if she would eat; that he thought she had something in her ear. I remained some time examining her; when an ear of corn was thrown to her she would make many attempts to eat it before she could effect her purpose; going round, and attempting to bite the corn as she passed. When, however, she did succeed in getting it, she would remain still a few moments, but as soon as she was made to move she would again begin to go round. I now had her cought, cut off a piece of each ear, and poured her ears full of castor oil. She appeared perfectly deaf, and I did think her blind, as she would run against the fence, trees, &c.; but as she appeared to see me when I approached her, I believe she saw but could not avoid such things. She got worse very fast, going round, and falling &c. She had symptoms so exactly resembling the blind staggars in horses, that a description of one would answer for the other. As I have never seen a horse recover from the staggers, and as this appeared to be same disease, I had her driven some distance to die, for I thought death certain; in the evening, however, she came up, still going round, but able to remain still while eating longer. Next day she was still better, but still going round; she, however, continued to mend, and recovered.

As Monday was a day when many of the farmers were in town, I went in the evening to make inquiry about the disease. I was surprised to find that this disease that I had never seen or heard of, was not very uncommon. I inquired of many old planters; the accounts I received were so near alike, that to give the statements of some, will convey all the information I received. One aged planter said he had often seen it; it always occurred after hard rains in the spring; it was caused by rain getting in the ears; that when one ear only had water in it the hog would either hold the head on one side or turn round; if he only held the head on one side, he would be a long time lean, and could not be fattened for a year or so, but get well; if they turned round they always died, some soon, but some would linger a long time; but if both ears had water in them, they would hold the head up, and go more straight forward; they would always die. He called it the blind staggers; knew no remedy.

Another wealthy planter, whose long life, great experience, and accurate observation, has made his mind, as it were, a store-house of facts, to which we could seldom apply without receiving pleasure and instruction, gave this statement: he had seen his hogs affected with the blind staggars often; it always occur after hard rains; they always died, but some lingered sometime. They always went round and round; had tried many remedies,

but none proved useful; that it was caused by water getting in the ears; that it exactly resembled the blind staggers in horses. He had taken more notice of the disease, on account of the following circumstance: many years ago, a poor man begged him to let him plant corn in one of his distant fields; he told the man he would be welcome, but the fence was bad, and he would injure the neighbour's hogs. The man promised he would not—he let him the field. By-and-by, when the corn was ripe, hogs began to break in. He saw the man catch the hogs and urinate in their ears, and then stop it up with clay; that the hogs would run home immediately and die with the staggers, just as when rain got in their ears; that he urinated in a number of the hogs' ears, all of which suffered in this way, before he knew what effect it would have; he then stopped him; that there was no difference in the effect produced by the urine and by rain getting in the years.

Another old man said, he had seen the blind staggers in hogs; it occurred after hard rains; they would not always die, but it was best to kill them as soon as it was discovered. If they recovered they would not fatten for a year or so, and took more to feed them than they were worth.

On Monday night we had as hard a rain as I ever saw. On Tuesday morning I left home to go thirty miles. A few miles from home, I saw a large sow on the road, exactly like mine. I chased her on my horse; she would try to run away, but could not; she would run round and round my horse. I went up to the house and inquired about her; the man said she was well the night before, and came up in that way in the morning; they did not know what was the matter with her. I overtook an old gentleman travelling; we rode together, and came up to a hog in the road; she would attempt to run off, but would turn round, fall into a ditch, get out, turn round in the road, and fall into a ditch again. Thus she continued going round, and falling into the ditch every time. The old man, without my making particular inquiries, gave me this statement: his father was a hog raiser, and kept a great many hogs; he had often heard him speak of the disease, but as his father had learned him a sure remedy he had never had it in his hogs; he had seen it but knew nothing of it himself; that his father said, he once had a neighbour who marked his hogs, so as to cut off nearly the whole of the ears; that he was supposed, in this way, to alter other people's marks into his, but that he never gained by it; for in the spring when the season was rainy, water got in his hogs' ears and nearly killed them all; that he never marked his hogs, nor his father before him; this was a certain preventative of the staggers.

I passed a country store where a number of persons were collected, and stopped to inquire of the old men. One old gentleman of intelligence gave this statement: in hard rains, water got

in the ears of the hogs that were much bitten on the ears by dogs, or that were marked by cutting off the ears too freely; that he never lost his hogs; he poured cow-foot oil in the ears; they got well, but would not fatten that year; that an old man taught him how to cure it; that if persons would only take off a little of the ear in marking, they would never have the disease. This, I believe, includes all that I could gather by inquiry, from a great many persons; from all of which no doubt is left in my mind but that the disease is in reality produced from hogs getting water in their ears.

Now let us notice *the blind staggers in horses.* All who have been on hor-e back, in hard rains, must have noticed, that horses dread them very much. Free horses require the spur to urge them on, when facing a beating rain. Why is it not as probable that his own knowledge tells him there is danger in it, as well as that instinct makes him dread the gad-fly for fear of bots, as many contend?

I was once fording a river, my horse stumbled and went into the water over head and ears. It appeared to make him frantic; he began to shake his head and leap, then to turn round and round. With difficulty I got him out of the river; he then dashed forward, paying no attention to the road, logs, or any thing else. Finding the bridle had no effect on him, and that I might be killed by remaining on him, I let go all hold, and tumbled off; he run home. He was not sick afterwards; but did water in his ear thus affect him? I was once coming home; a severe storm threatened; I rode very hard to escape it; my horse was covered with sweat; when near home, the rain fell very hard. A day or so afterwards, my horse had the blind staggers and died. I attributed it to his getting wet when warm; but was it from rain getting in his ears? I have never known an instance of a town horse that was never exposed to hard rains, having the blind staggers.

I formerly kept a saddle horse, to be rested at a plantation about five miles from home. I had no stables, and my horses were exposed to the weather. The season was very wet, and the rains hard. I rode to the plantation; my horses were all in good order, and mostly young. I left my horse and took this rested horse to ride home. When I got on him, instead of dashing forward as usual, he went with his head down and dull. By the time I was half way home it took all my strength pulling one rein, to keep him in the road. He constantly inclined to turn out to the left hand. He was very spirited, but whip and spur could scarcely force him on. With difficulty I got him home; when let loose he began to go round and round; many things were done for him, but he died. The next day I received news that my best horse at the plantation had the staggers.

I went there, but he was dead. While looking at the horses eating in a trough, I saw one make a sudden start, half fall and recover. I did think a snake in the trough must have bit him; he began to go round, and died that day. In about ten days, I lost nine horses, most of them lived several days, but all went round and round till they died. During this time, a number of horses in the neighbourhood died in the same way; mine were bled very freely, but nothing appeared to have any effect. An old gentleman was sent for from another county, who professed to be able to cure it. I sent for him also to see my horses; he made a gimblet hole in the forehead: he supposed it went into the brain; but it only went into the nostril; it, however, did no good, every horse attacked with it died. I went and staid with my horses, and did, I thought, all that could be done. My other horses were all bled, and taken better care of, and escaped. I had occasion to visit Mr. Moss' plantation on professional business; he had just hauled away the thirteenth horse he had lost; he described the disease just as mine had it. Mr. Moss' plantation was newly settled; he had no stables, and like my horses his were exposed to the rain. Whether other men who lost horses had stables or not, I do not know—but did my horses and Mr. Moss' die with staggers, from rain getting in their ears?

Now, from what I have said, is there any probability, or even possibility, that this fatal disease in horses, the blind staggers, can be produced by water in the ears? I have no doubt this is the cause of it in hogs. Whoever has seen it in a hog, must have noticed how precisely similar the symptoms are. If it should produce such an effect in hogs, why not in horses also? I always thought that in the horse it was an inflammation of the brain; but to have bled, as freely as I have, in several cases of simple inflammation, without the smallest effect, is almost incredible. I have examined the brains of horses; there certainly was the appearance of inflammation, but not sufficient to satisfy me that this was the only cause of so fatal and violent a disease. Why does not inflammation of the brain in man and other animals, produce such symptoms?

When I was a small boy, I remember to have seen several horses with a circle of white hair round the ears. This was said to have been from filling their ears with garlic; after squeezing the juice in the ear, and tying a string round to retain it there. Did these old folks mistake some other disease for the staggers; was it milder then than now, or did this remedy cure it? If it was the staggers, such as we now have, they cured it. I am certain I have seen a dozen horses with these circles round their ears. Why it was used I do not know; I placed no confidence in its effects. I have never used it, nor seen it used; nor have I ever seen a horse recover from the staggers. Did

they, in old times, consider the ears involved in this disease, and prescribe garlic with that view, and thereby effect what we have not been able to do without it? In violent inflammations and pains in the human ear, there is no local application equal to garlic juice.

It may be said if this cause produced this disease, why do horses, that are out in pastures, so seldom (if ever) have it, or why horses that are made to swim, and often have their heads plunged under water, do not have staggers? Every person, who has ever noticed, must have observed, that the horse when exposed to rain and not confined, turns his rump against the wind; and as the wind changes so he turns to oppose it. This, aided with the form of his ears, is an effectual preventive to water getting in. On the contrary, when he is rode or driven in a storm, it is for the most part rapid, and he has not this choice of position to prevent rain getting in his ears. When confined in horse lots, it would be common to bring them in before or during a storm. This would be a time to feed, standing by the trough, fighting, &c. would prevent using the caution of position; and for those that have been plunged under water, all who have been in the habit of swimming, may have noticed, that it is only occasionally that water gets in the ear, and some persons are never troubled in that way. It is easy to understand, that when the ear is under water, the air thus confined in it, is a preventive to its getting in. They will also recollect, that when water gets in the ear by turning the ear down, &c. which horses do not do, it is even then difficult to get it out.

It may appear almost impossible that water in a horse's ear should produce such an effect; so, indeed, it seems to myself; but as the most careful inquiry I could make has satisfied me it does have this effect on hogs, I now suggest the inquiry—is it probable, or even possible, for it to have such an effect on horses also? Should I have another horse affected with the disease, I would treat him in this way: first copious bleeding, then a large dose of laudanum, then oil of turpentine, garlic juice, or something of the kind, poured in his ears, mixed with laudanum; and cloths dipped in hot water and applied to his head, and a part of his neck, until they blistered largely. If he died, I would make a minute and careful dissection of the ears, to see if I could discover any causes of the disease there. Vale,

ROBERT R. HARDEN.

[The following is the successful Dissertation, for which its author, the Rev. Morrel Allen of Pembroke, Ms. was awarded a premium by the Plymouth County Agricultural Society, at their late anniversary at Bridgewater.]

Art. XLVI.—*Dissertation on the Mixture of Soils.*

[from the new-england farmer]

The author of nature constructed the earth to produce, spontaneously, a vast variety of plants and trees. Uninhabited regions, with a few exceptions, are found covered with a vigorous growth of some sort of vegetable substances.

When the hand of cultivation is first applied, and the natural groth subdued to make room for such plants as are esteemed more useful, the soil is always found in a state of great richness to produce cultivated plants. It is in a course of imprudent cultivation, soils are ever rendered unproductive; by what is called severe cropping in taking away the produce, and not returning a just compensation. The art of successful agriculture chiefly consists in devising and complying the most effectual means of restoring to soils, those qualities which are taken from them in the removal of crops. The perfection of this art is not to be attained without very deep research in some of the most intricate branches of philosophy.

It is necessary to analyze both plants and soil, to discover, with minute accuracy, what qualities are best adapted to the vigorous growth of certain plants; but the art may be acquired in sufficient measure, for the most useful purposes of life, by observation and a course of experiments within the reach of every practical man.

Diligent attention to the designs and operation of nature, in the vegetable world, will qualify us to make, in many cases, certain returns to the soil of properties which we shall perceive has been taken from it, in a course of cropping. The vegetable substances which abound in newly cleared lands, in different degrees of decomposition, and cause the soil at first to yield crops in great abundance, are in a few years exhausted; after which, some soils, especially those that are warm, loose and naturally favourable to grain, become extremely barren. Here it seems scarcely possible for any man to mistake the cause, or err in his judgment of the most efficacious application, to restore energy to the soil. It wants nothing but the stimulus of decayed vegetables. This stimulus can be applied in various ways. It is applied with the greatest immediate influence, in the form of excrementituous manures, but these are not attainable in the ordinary situations of farmers, to an extent sufficient for all the purposes of an improving cultivation. It is also applied in mixing plants, in the most vigorous state of their growth, with the soil, and it is appli-

ed in mixing one kind of soil with another. The mixture of soils, even when there is very little apparent difference in the qualities, is always attended with some good effects.

Particles in a soil, which had long been in contact, and, in consequence of long connexion, lost much of the energy of their action on plants, are separated in mixing soils, placed in new connexions and act with renewed vigour. But the most permanent and best effects are always to be expected from the mixture of soils of different qualities. When the object is to produce as much immediate influence as possible, merely to assist one short rotation of crops, to have the application we make, act chiefly as manure, then we may take our materials from any situation, where we know vegetable substances have fallen and decayed.

We may go into forests, and, certain stages of the growth of wood, without any perceptible injury, skim the surface of the lot. This soil of the woods, carried in sufficiently large quantities on to old fields, will restore them to original productiveness. And this will sometimes prove an inexhaustible resource for renewing old fields; for as often as the old fields decline, the soil in the wood-lot will be again renewed and fit to remove. For the same purposes, the earth should be carried from the sides of walls and fences, where the leaves have lodged from the forests. It should be also carried from hollows and temporary ponds, which, in certain seasons of the year, become dry and afford immense quantities of vegetable matters, in different stages of decomposition, and suitable to apply to any kind of soil.

Where streams of water occasionally overflow the banks, an abundance of vegetable and earthy matter is lodged on the meadows, which in many cases, especially where there is not much extent of meadow to receive the substances conveyed by the stream, it is prudent to remove on to higher land. It will there act as manure and at the same time gradually alter the texture of the soil, rendering it more retentive of due and rain, and easily penetrated by the fibrous roots of plants. Of the value of those substances which are carried in streams of water, to enrich soils, we have most convincing proof in the unexampled productiveness of interval lands. It is not exclusively the vegetable substances carried on to these lands, that makes them so astonishingly productive; there is a portion of every kind of soil existing in the surrounding country, annually carried on with the vegetable substances. Intervals are composed of every sort of earth the water can reach and remove. This circumstance may properly encourage the mixture of many kinds of earth, even when there is no particular evidence that each kind is especially adapted to remedy any deficiency in the soils, which we would improve. There is less hazard in administering medicines in great profusion to cure the diseases in the soil, than in the human body. What is always disgraceful in the physician, viz. to boast the number

of his applications and the judgment with which they have been made, as it is impossible for them to do any harm, if they do no good, may in the farmer, often be a course worthy of praise. In stepping out of the beaten path of habitual practice, and calling attention to experiments, which to some may look very simple and to others very absurd, we may become instrumental in the discovery of highly important truths.

Accidental occurrences often produce results, which show us that much useful knowledge might be obtained in a course of new experiments. A load of coarse sand, removed merely for the purpose of clearing away an incumbrance and placed in some hollow on the farm, will often show how much that kind of soil can be improved by the application of materials, which seem to be wholly inactive and destitute of the food of plants. Many other applications of accidental origin, may lead attentive observers into new discoveries in the true philosophy, in relation to the mixtures of soils.

But we should not think the knowledge that has been acquired through accidental occurrences, or the speculations of theorists, which we have perused, can ever justify our neglect of other means of increasing and applying knowledge. New trials and experiments are necessary, to carry forward every important branch of agricultural knowledge with the most speedy and certain success. Theory may satisfy the speculatist, but practical men want ocular evidence; they are not easily persuaded to desert an old for a new path, till the obstacles are manifestly well cleared away. By attention to the constituent parts of soils through which streams of water pass, and the kinds of plants which grow most luxuriantly on the banks of them, we can discover the causes of the extraordinary richness of intervals and learn to imitate the operations of nature. In the removal of alluvial, to mix with other soils, the most important thing to be observed is, always to place it where the soil is somewhat different in texture from the soils through which the stream of water had passed.

This is a rule easy to understand and apply, and the observance of it will insure success to this sort of labour. The maxim of Kligogg, a famous philosophical farmer of Switzerland, will prove true in every region and climate: that 'every species of earth may be instrumental to the improvement of another of opposite qualities.'

When alluvion is placed on a soil, different in quality from that through which the stream passes, as far as composed of earth, it forms a proper and useful addition to the soil, and us much of it as consists of vegetable matters acts with as much energy in that situation, as it could in any other. The same rule is important to be observed in the application of materials taken from hollows and bottoms of temporary ponds. We should consider

what sort of earth has been washed into them, and endeavour to incorporate it with that of different texture. In this course, permanent improvements are constantly made in the soil, while every possible advantage is derived from the vegetable matters applied and acting as manures.

When soils are mixed, with a view both to permanent improvement and immediate influence on crops, it is also important to attend to the natural growth in the vicinity where our materials are collected, and apply them where our purpose is to cultivate plants, bearing some affinity to those which nature had planted in the soil removed. 'If we examine,' says the Farmers' Magazine, 'tracts of land, which have been cultivated, we find nature has adapted different kinds of plants to most of the distinguished varieties of soils; and although some belonging to one, may from some cause or other, be found on lands of a different quality, they seldom thrive or perfect there seed so as to become general.

The great care of the farmer ought, therefore, to be, by proper mixtures to reduce his lands to that state and temperament in which the extremes of hot and cold, wet and dry, are best corrected by each other, to give them every possible advantage flowing from the benign influences of the sun and air; to adopt such kinds of plants as they afford, in this state, the greatest nourishment to, and to renew their fertility by a judicious allowance of the most proper manures. Where these things are done, there are few spots so unfriendly to cultivation, as not to repay his expenses and labour with a plentiful increase. But without these, the best tracts of land will in time become a barren waste, or produce little but weeds.

Alluvion, as it is composed of earthy and vegetable matters, easy of access, and found in plenty on almost every farm, may justly be considered as our first and best resource in the admixture and improvement of soils. But without any great difficulty we can obtain access to many other materials, which will produce very permanent, if not so immediate and perceiveable good effects. We need not confine our researches to the surface of the earth; a vegetable principle is found in every stratum of it to the lowest depth penetrated by man. In digging far into the earth for materials to mix with the soil, we find those which, if properly applied, will produce very lasting good effects. We thus obtain a virgin mould, soon to become the parent of a vigorous and numerous progeny. Earth taken at some distance below the surface, can be incorporated with any sort of soil with some beneficial results—because the influence of the air upon the new earth will occasion so active an operation of the vegetative principle, that any kind of soil will be stimulated and assisted in that operation. It is, however, advisable, even in the application of pit earth, to regard the Swiss maxim and place it on a soil of different qualily. The different qualities of the pit earth

and the soil where we would place it, can be ascertained with accuracy enough by inspection. It is necessary to penetrate considearbly below the surface of the earth to find several substances, which become active and powerful, when mixed with suitable soils.

(*To be continued.*)

ART. XLVII.—*On the Utility of Burning Clay, as a means of correcting the Soil for Gardens.*

[FROM THE HORTICULTURAL REGISTER.]

Gentlemen,—I now send you my promised method of burning clay; and as it has fallen to my lot to operate on that material twenty-two years out of forty-eight, I may, perhaps, claim some attention from those who may be inclined to correct that material. Nothing can be more unfortunate to the proprietor, and to the person whose lot it is to conduct a garden, when the site happens to be a natural strong clay, and as this so often occurs, it has always given me the utmost concern. Until lately a remedy has been out of the question.

An occurrence, however, took place some years ago, which forcibly convinced me of the important benefit that might be derived, from attention to the subject. The instance is this:—a Mr. Nightingale, near this place, inclosed a piece of ground for a garden, of strong clay, and being acquainted with that celebrated agriculturalist, Mr. Tollet, of Betley, Staffordshire, he asked his opinion on the subject, who advised him to let the whole be burnt, which it was done in a few weeks; and a work was completed, I may say, in a few days, that never could, otherwise, have been done in his whole lifetime, that is, he rendered the ground prolific; and I never witnessed better success in crops, than I have done of every crop that has been planted in this composition.

A gentleman, who had inclosed a piece of ground of strong clayey soil, some years ago, inquired (through the means of the Gardener's Magazine, I think) whether he could have taken any other method than adding sand, ashes, light earth, vegetable mould, and other such like materials, sufficient to have made a garden upon a bare rock; but when (he adds) the whole was incorporated, it still remained a garden of clay.

I was then unprepared to make any answer to such inquiries, but have since much regretted, I did not take up the subject at the time. To make a proper calculation of the expense will be attended with some little difficulty, as it will very much depend on the materials used to burn with. Some persons recommend coal: this, however, I condem, as being of too violent a nature.

When I first came to this place, although the garden had been formed twenty-five years, with most excellent judgment, it was, for the most part, a strong clay; and within nine inches of the surface, even the most common articles would not live upon it. No weather appeared to have a good effect upon it. At one time it was covered with water, and at another, rendered impenetrable by being too dry. After witnessing the effect on a similar clay, at the place before named, I commenced burning, and in a few days produced a composition three feet deep, equal, if not superior, to any soil in the country. The clay is rendered as pliable as burnt chalk, and seems to be possessed of the medium of holding just a sufficient quantity of moisture, and no more: as far as I have witnessed, every thing appears to thrive in it; and I have every reason to think, that when clay abounds in peach borders, &c. that very much may be done by way of improving them. As an instance, I last summer applied a quantity of burnt clay to some old peach trees, and on examing their roots in the autumn I found abundance of good young roots, growing in complete bunches; and I believe, that were these borders composed of three parts of this material, they would not be attacked with those diseases so prevalent in the spring, would be more likely to make their wood with shorter joints, and ripen much better and earlier than they could do in a compost, strongly manured.

My manner of performing the process, is as follows:—I throw out a trench eight feet wide, and about three feet deep; into this I place as much small wood, or faggots, as will fill the trench to the level of the ground, upon this I place a quantity of stronger wood, such as the root of old trees, &c. which must be regulated according to the quantity of clay about to be burnt: when the whole is completed, I take the advantage of fine weather to light the fire; when this is done the whole is covered up with that part of the clay which came last out of the trench, as of course it is the strongest; as the fire advances, more is thrown on the heap, making an embankment with the top soil, and all that part which contains any vegetable matter. As the fire increases, the clay contiguous to the fire is dug up, and thrown on the top; and should the weather prove dry, there will seldom require any addition of fuel. I have often been of opinion that I could add to

the mass, until it reached to the height of a garden-wall ten feet high.

As the violence of the heat subsides, I spread out the soil, which, from the carbonaceous principles it receives in the process, is rendered in point of richness, fully equal to soot. Indeed, I calculate that the ground so heated will require no manure, for at least four or five years, as every species of vegetable appears to grow much too strong for the first two years, with doing nothing more than giving a slight raking. The clay here, probably is superior to that in some other places, owing to the quantity of calcareous matter it naturally contains, I conceive a portion of it is converted into lime, in the process of burning.

Burning clay, entirely destroys every species of insect and pernicious weed, and on whole quarters, where the process was performed years ago, I have scarcely observed either slug or snail.

I have no doubt, the business might be done with good success and very little expense, where furze and heath could be readily obtained; and as it would take more in proportion to the fineness of such materials, it would tend to enrich the mass to a very high degree. As the price of making up faggots almost amounts to their real value, we have taken the wood direct to the trench, without that process, which has answered very well.

I make it a rule, never to burn more clay on a given quarter, than the space requires to correct the soil, as it would be a waste of labour to remove it from place to place; and as it may be operated upon close to any tree or crop without danger, it is more desirable to perform the operation on the spot. The fire will sometimes require probing, to allow the air to enter; but I never wish to see much smoke escape, as I am certain it greatly contributes to enrich the earth. There will require no particular caution with regard to burning the clay too much; it will be seen, that as the wood consumes, the first course of clay will fall to the bottom of the trench, and this will perpetually take place until the whole of the wood is consumed by the fire, by which time, a body of hot clay will have fallen to the bottom: when, to secure success, I level down the heap, but take particular care not to break or pulverize the compost—the more this is avoided, the longer it will retain its fertilizing qualities.

Those who have new vine borders to make, could not do better than add to their compost one-third of burnt clay, as the average quantity of rain that falls in this island never properly suits the constitution of vines. I think it would prove an excellent corrector, and prevent those troublesome insects, the wire-worms, from injuring the roots of the vine, and the cost, in most places, would be very trifling. I think, too, that it would be well calculated for anything that requires mulching, for applying liquid

manure does not in the least consolidate it. This is, I consider, a great recommendation.

If you think these observations of any importance, you will oblige me by inserting them in an early number.

And believe me to be, Gentlemen, yours, &c.

GEORGE STAFFORD.

Willersley, July 19, 1831.

ART. XLVIII.—*The Flower Garden, &c.*

[FROM THE VIRGINIA FARMER.]

But the south border, on an east and west line, under a north side of a high wall or board fence is not less important. Many of our finest native flowers perish when taken from the forest and exposed to the sun: and several *exotics* are not more able to support the heat. Last season we had a deep trench cut three feet wide, and then filled with vegetable earth and rich loam. We consider it more valuable than any equal portion of the open garden. Here seeds may be sown, which are so fine as only to bear a slight covering of earth, but which yet require to be kept moist, and from which the young plants are so small and weak as to perish in hot sunshine, and here slips and cuttings may be *rooted*, which would irrecoverably wither beyond its shade.

Such a border, screened from the sun in the hotter part of the day, will remain moist when the open garden is suffering from drought. But many plants require the full heat of summer as well as moisture. For these we have a wide border trenched two feet deep, into which rich loam and much vegetable matter were thrown in alternate layers, but which do not quite rise to the common surface, and into this is led all the surplus of the garden in rainy weather We have no fountain, and this was adopted as a substitute. In winter the snow settles more on this low part, and the frost penetrates but little below the surface.

There are also plants of the hills which are very desirable; and in a level garden, an artificial mound may be constructed at small expense. For such plants require a sandy soil, the cultivator whose garden is a clayey loam, may raise a border on the surface, ten or twelve inches high, composed of yellow pit sand, (not free from clay) and vegetable earth from the woods. The labour is trifling; and notwithstanding the prejudice against "carting

dead sands," our own experience has shown that it forms one of the finest of factitious soils.

As a summary, some ornamented plants do best on a raised border; others on the common level; and a third class below the common level. Some require the full blaze of the summer sun; while others only flourish in a shade approaching to twilight. Attention to these hints by the florist would save hundreds of plants.

No inconsiderable part of the skill of the regular gardener, relates to multiplying plants which increase too slowly if left to the unassisted operations of nature, and as duplicates of particular kinds are very desirable to every proprietor, either for himself or for others, we offer the following notices.

Last year we took *scales* from the roots of the *pompanian lily*, *the double white lily*, and *spotted white lily*, about midsummer, and set them in a box of vegetable earth which was shaded, and in dry weather watered. In autumn, almost every scale had formed a small bulb, where the end had been severed from the main root; and some of these new plants had even at that time produced single leaves. This spring some are already in four leaves. We hope that by this method, "Lilium L. spectabile," and some others may soon be so much increased as to be offered at reasonable prices.

The seeds of the *oriental poppy* rarely vegetate, but small bits of the root separate in autumn, produce leaves in spring. We have now thirty thriving plants from the fragments of one plant which was taken up last season.

Art. XLIX.—*Cultivation of Turnips.*

[from the American farmer.]

"Spring Hills, Fluvana, (Va.) May 6, 1832.

Mr. Smith,—The frequent failures which come under my notice in raising turnips, induces me to say a word upon my mode of cultivating that crop in a small way, thinking it probable that the same cause and effect may exist in other parts of the country. I am the more willing to hazard these remarks, as they propose to the farmer the means of killing two birds with one stone, namely: making turnips and land at the same time. This will

no doubt suit many as well as it has me, especially those who have much poor land and who burn much wood.

For my turnip lot, I select the poorest gald I have, (even a northern exposure not refused.) Early in spring (if not the fall before) I work it well with the plough or coulter, as may best suit. If grassy, with a plough that turns well; but if clear of vegetation, I prefer the single coulter, to be run very deep. The reason is obvious, and if there is grass or clover, it must be destroyed, and this can only be well done by turning it under; but if none, the coulter is best, as, in that case, you can work the ground to the desired depth, without throwing up the under clay, which requires more manure and work to bring into a fine tilth. In either case the lot should be coultered several times afterwards. If the clay is stiff, I carry on as much fine sand as I can with convenience. Sow in June or early in July, carry on all the chips from the wood pile, which are carefully preserved, spread and ploughed under—the ground should then be well rolled.

About the first of August, all the ashes, both leached and unleached, mixed together, which can possibly be saved, are carried on, and very evenly spread, lightly ploughed and harrowed in. By the the 10th of August the seed sown, together with some grass seed, say clover, timothy, orchard grass, or a mixture of all, and lightly harrowed in.

In this way I have had from half an acre, as many turnips as were necessary to complete the fattening of two to three beeves late in fall when summer grass was scarce, and the late fall growth of clover is of but little use to them; besides as many as I cared to store away for winter use. I would say that this quantity of manure is saved from four or five fire places. I adopted this plan seven years ago, and have never missed a fair crop—some very fine indeed, and that upon land entirely unproductive before. The lots have given astonishing growths of grass afterwards, and give promise of so continuing. There being no grass or grass seed upon the land when I begin to operate upon it, and the manures used having none, makes it unnecessary to weed the turnips. Many select for their turnip lot a bit of strong earth, and of course it is well stocked with the seed of grass and weeds, otherwise manure with stable or farm-yard manure. Sow broadcast, the weeds and grass spring up, perhaps before the turnips, at any rate soon get the start; they are busy, cannot take time to hand-weed the turnip patch, but few are raised, and they of diminutive size—they conclude that the seed I gave them were not of the same kind I use myself; others go to the woods, clear up new ground. The seed perhaps spring up, the ground is light, the drought and fly together destroy the crop. I had raised good turnips by using strong manure and working them, even when sowed broadcast, but find it very exhausting to the

land, and as I go for the future condition of the land more than one crop, I accidentally fell upon my present plan as an experiment, for I concluded that if I should get no crop, I should not hurt my lot much, as the chips could not be sufficiently decayed to part with much of their strength, but to my astonishment I had good turnips. I then took better care of my chips and ashes, and have now a nice string of lots on which no other manure ever went, some having produced several crops of wheat.

Some might say that as I seem to be afraid of grass and weeds; why sow grass seed? In reply, I would remark, that the kinds proposed make so slow a start that they never injure their crop so much, and often the clover does not come up till the next spring.

These remarks I place at your disposal, perhaps, at some time or other you may pick something out of them.

I am, dear Sir, yours, &c.

J. T. Jones.

Art. L.—*The Dairy.*

[from the library of agricultural and horticultural knowledge.]

In treating of the dairy we propose adopting the following arrangement:—

1. Situation of the dairy.
2. Nature and properties of milk.
3. Making and curing of butter.
4. Process of cheese making.

I.—*Situation of the Dairy.*

1. The dairy house should be erected in a situation which is airy. The walls and roof protected from the influence of the sun, that the temperature throughout the year may range from fifty to fifty-five degrees; hence, a northern aspect will be most desirable. A dry situation should be selected to give facility to cleanliness; all stenches are injurious—it will, therefore, be advantageous to use spring water frequently, (and especially during the warm weather) which, if the situation be favourable, may be supplied by a pipe leading from some neighbouring

spring. In conducting a butter dairy, it will be advisable to divide it into three apartments—a milk house, a churning house, with conveniences for washing and scalding the implements, including a suitable boiler, and a room appropriated for keeping them in, and where they may be dried when the weather is unfavourable. A cheese dairy may be divided into a milk house, a scalding and pressing house, and a salting house. The milk dairy requires only two apartments—a milk house and a room for scalding and cleansing the utensils, and for other necessary purposes.

2. The utmost cleanliness should be observed throughout. All the utensils employed in making butter should be scalded, scrubbed, rinsed, and dried every time they are used. In making cheese it is not so necessary to scald as it is to have them well washed and dried every day. When vessels become tainted with the acidity of milk, such vessels are like a leaven to every thing placed in them, and should be thoroughly cleansed by boiling; but when this is not effectual, alkali added to the boiling water will be found essential, and afterwards the utensil must either be boiled or immersed for two or three days in pure water.

II.—*The Nature and Properties of Milk.*

The chemical properties of this secretion differ somewhat in different animals. The milk of the cow has been most attentively examined, and it has the following properties:—

1. It is nearly opaque; white, or slightly yellow; of an agreeable sweetish taste, and a peculiar smell. Its specific gravity varies from 10.18 or 10.20. It boils at a temperature a little above that of water, and freezes at 32 degrees. When allowed to remain a few hours at rest, a thick unctuous liquid collects upon its surface, called cream; the colour of the remaining milk becomes bluish white, and when heated to about 100 degrees, with a little rennet, it readily separates into a coagulum, or curd, and a serum, or whey. In this way, the three principal constituents of milk are separable from each other.

2. By the process of churning, cream is separated into butter and buttermilk; the latter being the whey united to a portion of curd. Butter may be considered as an animal oil, containing a small portion of curd and whey.

3. The curd of milk has the leading properties of coagulated albumen. Curd in combination with various proportions of butter, constitutes the varieties of cheese. That containing the largest quantity of oil becomes semi-fluid when heated; it is prone to decomposition, and a large quantity of ammonia is then formed in it; whereas, bad cheese, which consists of little else than curd or albumen, shrinks and dies when heated, curling up like a piece of horn.

4. When in a transparent fluid, of a pale yellow colour, and a sweetish flavour; by evaporation it affords a minute quantity of saline matter, and a considerable portion of sugar of milk.

Having stated the chemical properties of milk, it may, perhaps, be advisable to advert to some observations made by Dr. Anderson, relative to the quantity of cream which is obtained at various periods during one milking:

"The first drawn milk from any cow, at any time, is always much thinner, and of a worse quality, than that which comes afterwards, the richness continually increasing to the very last drop that can be drawn at that time;" so that if the milkers do not perform their task thoroughly, even to the last drop, or supposing to the last half pint, the owner loses as much cream as would be afforded by six or eight pints at the beginning, the last quantity containing the richness and high flavour of the butter in a high degree. This the Doctor proves by various experiments, thus; "Having taken several large tea cups, exactly similar in size and shape, and filled them at regular intervals, during the period of one milking, the last being filled with the dregs of the milk: they were eached weighed, so as to ascertain that the quantity of milk was exactly the same. The quantity of cream obtained from the first drawn cup; in every case was much less than from that which was last drawn; and those between afforded less or more as they were nearer the beginning or end. It is unnecessary to specify intermediate proportions; but the quantity of cream obtained from the last drawn cup, from somes cows, exceeded that in the first in the proportion of sixteen to one. In other cows, however, and in particular circumstances, the disproportion was not quite so great; but in no case did it fall short of the rate of eight to one. Probably, upon an average of a great many cows, it might be found to run as ten or twelve to one.

"In the next place, the difference in the quality of the cream obtained from the two cups was much greater than the difference in quantity. In the first cup the cream being a thin tough film, and very white; but in the last two of a thick but yraceous consistence, and of a glowing richness of colour that no other kind is found to possess.

"The difference in quality of the milk that remained was, perhaps, still greater than either the quantity or quality of the cream, that in the first cup being a thin bluish liquid, while that in the last was of a thick consistence and yellow colour, more resembling cream than milk, both in taste and appearance."

If milk be put up in a dish, and allowed to stand till it throws up a cream, that portion which rises first to the surface is richer in quality, and greater in quantity, than that which rises in a third equal space of time; and that of a third than that of a

fourth; and so on, decreasing in quantity, and declining in quality as long as any rises.

Thick milk always throws up a smaller portion of cream that it actually contains, than milk that is thinner; but the cream is of a richer quality; and if water be added to that thick milk, it will afford a considerably greater quantity of cream than it would have done if allowed to remain pure; but its quality is, at the same time, greater debased.

"Milk is put into a pail, bucket, or other proper vessel, and carried in it to any distance, so as to be much agitated, and in part cooled before it be put into the milk pans to settle for cream, never throws up so much, nor so rich cream, as if the same milk had been put into the milk pans directly after it is milked."

Since the time of Dr. Anderson's observations, an ingenious instrument has been invented, called a lactometer, by which the quantity of cream from a given quantity of milk may be observed, by mere inspection. The description and application of this instrument are clearly shown in the following extracts from a letter received from Miss A. Bradshaw, of Linfield, who, in connexion with this subject, has made some judicious remarks on the produce of cream dependent on the nature of the pasturage on which the cows are fed.

"The lactometer is a straight glass tube, with a mark at the top to denote a hundred parts of milk, that must be put in when it comes from the cow. The upper part is graduated, perhaps twenty or thirty degrees downwards; and after the milk has been in ten or twelve hours, it will be very visible what per centage of cream the cows milk gives. Thus—if it is in the fifteenth degree the cream will be 15 per cent. The last milk taken from the cow has always the greatest portion of cream, and this will often vary, according to the food the cow is getting. Tares and lucern will produce good cream in summer, and beet and mangold wurzel in winter; and if a small quantity of saltpetre be dissolved in warm water, and put into the cream previous to its being churned, it will take away any unpleasant flavour those roots might otherwise impart to the butter. When it is wet weather, the cream will not be in so great a quantity, as in fine dry weather, and the richer the ground is that the food comes off, the more cream there is, and the better the milk; upon an average I get one pound of butter from twelve quarts of new milk, and four quarts and one pint of cream produce four pounds of butter, as the soil gets richer. I have observed that it takes a less quantity of milk for a pound of butter, and a greater quantity of butter will be produced from one quart of cream in summer. I skim my milk every twenty-four hours, but this depends partly upon the state of the weather; if it be cool, I can keep it thirty-six hours; in winter it may stand from thirty-six to forty-eight hours,

very well. Cleanliness is the greatest importance; and it is always necessary to take care not to dip the skimmer into the milk which has stood the longest, and afterwards into that which has been strained up a shorter time."

(*To be continued.*)

Art. LI.—*Eggs and Poultry.*

[FROM THE GENESEE FARMER.]

The Editor of the New-York Farmer speaks, in the 123d page of the Genesee Farmer, of Judge Buel's method of preserving eggs. The plan is a good one; but will not the old way of laying them down in good clean salt answer as well? I apprehend it will. Let a layer of salt, at least half an inch thick, rest on the bottom of your cask or box, then carefully lay in your eggs, not so close as to touch each other by half an inch. Let the salt, broken up fine, be carefully distributed with the hand between every space, and to the depth of half an inch over their surface, and thus follow it up till your quota is complete. The salt when taken out, is as good for cattle, horses and sheep as any other, and no loss is sustained.

During the months of September and October of last year, I put up a large quantity of eggs in this manner, and the last were used but a few days since, as fresh and sweet as when new laid. I imagine the grand difficulty with those who fail in preserving their eggs, if properly packed, is in the eggs themselves not being in good condition when laid down. It is a fact, and a shameful one too, that a great many of the eggs sold at the stores are but little better than addled, and very few of them are fit to keep at all. Hence it is important that those laying up eggs for future use, know that they are fresh and perfect. I presume that Judge Buel's eggs were laid on his own farm, and that his hens were well fed with wholesome food, and in good condition. Such was the fact with my own. I have kept fowls for many years, and always fed them well on grain, for which they have given me an abundant return in large, fine eggs, and fat, thrifty chickens. To have the best eggs, fowls must be well fed. It is ridiculous to suppose that half starved, poverty stricken hens can lay as many and as goods eggs as those which are well fed. Last year my fowls laid a great many *double* eggs, which I attributed

to their high condition. The breed, which I have always preferred, is a mixture of the large Malay kind with the common fowl. They are good layers and brooders, and the flesh I think finer than any I ever saw. Quarter, or half breeds, at six months old, are usually about double the weight of common chickens. Their eggs are also uncommonly large and fine.

Ducks, when well fed, will lay through the fall. Their eggs will keep annually well with those of the hen, but are hardly so sweet and palatable. It is said that Guinea hens' eggs are the richest of any domestic fowl. I am surprised that they are not more generally kept among our farmers. I once kept them for several years, and liked them much. By regular feeding they will become as tame as any fowls, and keep near home. They lay a great abundance of eggs—more than the dunghill fowl. They are rather shy to be sure in making their nest, but the eggs may be daily taken from it, whatever prejudices may exist to the contrary, without offence to them. Their flesh is good, and I think them a beautiful bird, and a great ornament to the farm yard. They are, however, bad mothers, owing to their rambling propensity, and their eggs should be set under common hens for raising chickens.

Do any of your subscribers keep Muscovy ducks, and is this climate favourable for their propagation? I should like to know. They are fine birds for the table, and great quantities of them are raised in the States south and west of Pennsylvania, where their flesh is considered a great luxury. I may talk with you more about fowls hereafter. Yours, truly, ULMUS.

ART. LII.—*Leisure Moments, No. Six—Straw.*

[FROM THE GENESEE FARMER.]

In No. 1, I promised not to be a very frequent visiter in the colums of the Farmer, but I find upon employing my leisure moments, that I have more than I was aware of; and the interest that I feel for the welfare of our "farming community," is the only apology I have to offer for laying my ideas before the public.

Since the introduction of thrashing machines into this part of the country, it is a very common thing to see large heaps of straw around the barns where there have been in operation.

Many farmers are at a loss what to do with it, or how to manage it to the best advantage; while others are so indifferent about these things, that to get it out of the way with the least trouble is their only care.

It is an object of the highest importance to every judicious farmer, to understand the right application of manures. Plants need feed as well as animals, and he who neglects to feed the former, might, with about as much propriety, neglect the latter, for without the former, the latter could not exist. The existence of man, and all the inferior animals, depends upon the annual quantity of plants which the earth brings forth for our use; but by a careless mode of culture, and a neglect to supply the proper nourishment, the best soils will soon begin to degenerate, and at last refuse to pay the husbandman for his toil.

Dry straw is considered by some to be worth but little for manure; and it is worth nothing, indeed, so long as it remains in this state. Others are prevented from applying it on account of its comparative bulk—and the consequence is, it is suffered to remain in the barn-yard, exposed to sun and rain, until it is reduced by fermentation to a black mass of carbonaceous matter.

By this means, much of the manure is lost by evaporation, and the noxious gases constantly emanating from such a body, render the atmosphere very impure, and are oft times the cause of much sickness and disease, the neglect of man, thus suffering these gases to poison the air which he breathes; which, if properly applied, would be converted by the order of nature into the most healthful nutriment.

The true, economical method of making the most of manures, is to bury the whole under the soil before fermentation commences. In this manner the whole is saved. When decomposition takes place, the gases, as fast as liberated, are taken up by the roots of the growing plants, entering into new combinations, and forming new plants, to flourish for a period and then wither and decay like the former. But to return to my subject, the best method of applying straw as a manure, is to spread it over the ground intended for corn, so as completely to cover it. When the ground is ploughed, a man should follow the plough with a rake, raking the straw into the furrow, for a space just wide enough for the next furrow. It is necessary that the ground should be ploughed deep, and the straw raked in and trod down completely, the raker walking in the furrow to tread the straw down, so that it may all be covered up by the plough. The ground should not be ploughed again, as it would plough up the straw. If it is well covered, but little of it will be disturbed when working among the corn. The effects of the manure will be the greatest at the latter end of the season, when it is most needed. At the time of the filling out of the ears, the action of the manure applied in this way is peculiarly adapted to the purpose, as it

then exerts its greatest influence, and causes the cob to be covered with kernels of good size to the very end.

The effects of manures applied in this manner last longer, although their immediate influence is not quite so energetic.

"It appears from the experiments of Hassenpatz, (says Dr. Thomson,) that substances employed as manures produce effects in times proportioned to their degree of putrefaction: those substances which are most putrid, producing the most speedy effects, and of course soonest losing their efficacy. Having manured two pieces of the same kind of soil, one with a mixture of dung and straw highly putrified, the other with the same mixture newly made, and the straw almost fresh, he observed that, during the first year, the plants which grew on the land manured with purified dung, produced a much greater crop than the other: but the second year, (no new dung being added) the ground which had been manured with the unputrified dung produced the best crop; the same thing took place the third year, after which both seemed to be equally exhausted." YTUS.

PART III.

MISCELLANEOUS INTELLIGENCE.

Large Melons.—Mr. John Cammer recently sent to the Committee of the Horticultural Society, six Water-melons, weighing as follows: 31, 31, 31½, 35½, 42½ lbs. A large Carbuncle Rock Melon, weighing 23½ lbs. and measuring 38 inches in circumference, has also been sent to the Committee by Mr. Wm. Elfe. These may be considered extraordinarily large, considering the great drought which has recently pervaded the lower part of the State.

Culture of Opium in the South.—A writer in the *Southern Agriculturist* for July, recommends the culture of opium in the Southern States. Some years ago the present Editor of the American Farmer attempted to introduce the culture of opium in that section of the country. He considered it an object of great importance; imported seed from Smyrna, and distributed among his friends in the south. His own experiments were perfectly successful, as were all others so far as they were carried. Just, however, as we were about to enter into the project upon a larger scale, an obstacle, or rather an objection was suggested by a respected friend in Georgia, which caused us to stay further proceedings and abandon the project. The objection suggested was, that it would place within reach of the slaves of the south, the most potent and enchanting, and at the same time the most deleterious stimulant in the world; from the free use of which it would be impossible to restrain them, in consequence of the very small bulk necessary for their purpose. A still greater evil

was apprehended from the same class of the people having access to such a *machina bellica*. This suggestion caused us instantly to suspend operations, and we now lay it before the people of the south for consideration. There is no other obstacle to the production of the article in the south, to a most profitable extent; and if that be considered either visionary, susceptible of removal, or an evil against which sufficient precautionary measures can be adopted, we advise our southern friends to commence forthwith; for there are few things that infirm, superannuated and adolescent people can be employed at a greater profit.—*American Farmer.*

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Preventing the Sprouting or Germinating of Store Onions during the Winter and Spring.—"As the season has now arrived in which most gardeners have already taken up their store onions, or are about to do so, allow me to suggest a plan for preventing that sprouting or germinating principle which so often renders them inferior even at an early period, and almost invariably useless at a latter one, as an ingredient in our cookery.

As, however, it is not a plan of my own suggesting, but was mentioned to me by an old lady who had seen it practised in Holland, it is possible it may be known to many of your readers; though, as far my own experience extends, it is practised by none.

It is simply applying a heated iron for a few seconds to the nozzle of the onion whence the roots protrude; and though I am sorry to say I have no onions this year on which to try the experiment, they having been swept from me by some petty depredator, still I can testify from my own previous experience that it is an efficient mode of preserving them."—*Gar. Mag.*

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Vegetation of the Pampas of South-America.—The great plain of the Pampas, on the east of the Cordilleras, is about 900 miles in breath, and the part which I visited, though under the same latitude, is divided into regions of different climate and produce. On leaving Buenos Ayres, the first of these regions is covered for 180 miles with clover and thistles; the second region, which extends for 450 miles, produces grass; and the third region, which reaches the base of the Cordilleras, is a grove of low trees and shrubs. The second and third of these regions have nearly the same appearance throughout the year; for the trees and shrubs are evergreens, and the immense plain of grass only changes its colour from green to brown: but the first region varies with the four seasons of the year in a most extraordinary manner. In winter, the leaves of the thistles are large and luxuriant, and the whole surface of the country has the rough appearance of a turnip field. The clover in this field is extremely rich and strong; and the sight of the wild cattle grazing in full liberty on such pasture is very beautiful. In spring, clover has vanished, the leaves of the thistles have extended along the ground, and the country still looks like a rough crop of turnips. In less than a month the change is most extraordinary; the whole region becomes a luxuriant region of enormous thistles, which suddenly shot up to a height of 10 or 11 feet, and all in full bloom; the road or path is hemmed in on both sides; the view is completely obstructed; not an animal is to be seen; and the stems of the thistles are so close to each other, and so strong, that, independent of the prickles with which they are armed, they form an impenetrable barrier. The sudden growth of these plants is quite astonishing, and though it would be an unusual misfortune in military history, yet it is really possible that an invading army, unacquainted with this country, might be imprisoned by these thistles before they had time to escape from them. The summer is not over before the scene undergoes another rapid change; the thistles suddenly lose their sap and verdure; their heads droop, the leaves shrink and fade, the stems become black and dead, and they remain rattling with the breeze one against another, until the violence of the pampero or hurricane levels them with the ground, where they rapidly decompose and disappear; the clover rushes up, and the scene is again verdent.

Jamison's Journal—Arcana of Science.

Prangos Hay Plant.—In the Ninth Number, recently published, of Wallich's *Rarer Asiatic Plants*, the prangos hay plant is figured and described; and such extraordinary agricultural properties are ascribed to it that we take the earliest opportunity of noticing it to our readers.

"Its properties as a food for agricultural animals appear to be heating, producing fatness in a space of time singularly short, and also destructive to the Fasciola hepática, or liver fluke, which in Britain, after a wet autumn, destroys some thousands of sheep by the rot—a disease that, to the best of my [Mr. Moorcroft's] knowledge, has in its advanced stages proved incurable. The last mentioned property of itself, if it be retained by the plant in Britain (and there appears no reason for suspecting that it will be lost,) would render it especially valuable to our country. But this, taken along with its highly nutritious qualities, its vast yield, its easy culture, its great duration [a single planting will continue in healthy and profitable growth for forty years or more; hence the plant is a most durable perennial,] its capability of flourishing on lands of the most inferior quality, and wholly unadapted to tillage, imparts to it a general character of probable utility, unrivalled in the history of agricultural productions. When once [it is] in possession of the ground, for which the preparation is easy, it requires no subsequent ploughing, weeding, manuring, or other operation, save that of cutting and converting the foliage into hay.... From various facts it is conceived not unreasonable, to presume, that, by the cultivation of this plant, moors and wastes, hitherto uncultivated, and a source of disgrace to British agriculture, may be made to produce large quantities of winter fodder, and that the yield of highlands and of downs enjoying a considerable depth of soil may be trebled."

Britain does not yet contain living plants of *P. pabulária*, although it appears that seeds of it were sent here as early as 1814; whether when living plants be possessed, British winters may not be too severe for them, remains to be proved: but the writer above speaks as if he had little or no doubt on this point; and, as the plant is from a temeprate part of the East-Indies, (the neighbourhood of Imbal or Droz,) it may possibly be sufficiently hardy.—*Gar. Mag.*

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Chinese Gardners have a wonderful passion for reducing their flowering shrubs, and even the forest trees, to a dwarfish size. Cedars and pines may be seen more than forty years old, and yet not above two feet in height, while the trunks, banches, and leaves are well proportioned.—*Hort. Reg.*

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Russet in Apples.—Mr. John Williams, C. M. H. S. in a paper recently published in the transactions of the Horticultural Society of London, attributes the cause of Apples becoming russet, to the alternating temperature, light, shade, dryness, and moisture, which many times occur in the course of the day, when July or August is showery. Continued rains, preceded and followed by a cloudy day, does not seem to produce the same effect, but the sudden intense light which commonly succeeds a shower, at the time the fruit is wet, injures the skin, and occasions small cracks, like the net-work upon the melon.—*Ibid.*

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Mushrooms.—To ascertain whether what appear to be Mushrooms, are so or not, a little salt should be sprinkled on the inner or spongy part. If in a short time after, they turn yellow, they are a poisonous kind of fungus; but if black, they must be considered genuine Mushrooms. They should never be eaten without this test, as the best judges may be occasionally deceived.—*Ib.*

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Preserving Fruit.—In Japan, fruit is preserved by dipping it in yeast; the fruit, if very large, is cut in slices, if not, it is dipped whole into the yeast. It derives some taste from the yeast, but fruit preserved by this method, will keep a year or longer. The same method prevails also in China.

Thunberg's Travels.

To Restore Sour Wine.—Take dry walnuts, in the proportion of one to every gallon of wine, and burn them over a charcoal fire; when they are well lighted, throw them into the wine, and bung up; in forty-eight hours the acidity will have been corrected.—*Hort. Reg.*

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Wax Palm.—The Ceroxylon, a species of Palm, so called from its singular property of affording wax, is only found on the mountains of Quindiu, in South-America. Tropical plants in general, do not vegetate at a greater height than 500 toises above the level of the sea; it is singular, therefore, that the Wax Palm is never found below 900, and that it grows in great profusion at 1,450 toises, when the mean temperature is from 66 to 68 deg. Fahrenheit. It sometimes also springs up and thrives in regions 1,000 toises higher, and in a temperature 30 degrees below that in which any other of the same tribe or family are to be found. The Wax Palm rises to the prodigious height of 180 feet, and its leaves are 20 feet in length. A remarkable circumstance in this tree, is the secreted matter with which its trunk is covered, to the thickness of nearly two inches. This substance, according to the analysis of Vanquelin, consists of two-thirds of resin, and one of wax. Being extremely inflammable, it is employed by the natives, in conjunction with one one-third of tallow, in the manufacture of candles. W. Mc. M.—*Ib.*

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Feeding Swine.—Those who wish that these animals should have a sharp appettte, whilst they are fattening, must give them a couple of handfuls of dried oats once a day; taking care to have a supply for some days forward, constantly on hand. For this purpose a layer of oats must be placed in a pan; salt must then be strewed over it, and the whole moistened with a little water; taking care, however, not to fill the pan to the brim, as the moisture will swell the grain.—*Ibid*

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Norway Owls.—The inhabitants of a little village, called Helgay, three miles from Market Downham, are once in every three or four years infested with an incredible number of field mice, which devour their corn of every kind. As certain, however, as this visitation happens, a prodigious flight of Norway Owls are sure to arrive, and tarry till hese little mischievous criminals are totally destroyed. This season they repeated their visit; and in a few days, the Owls made their appearance, to the no small joy of the farmers, who pay almost the same veneration to these birds as the Egyptians did to the *Ibis*. As usual, they executed their business, which they seem providentally sent to perform.—*Ibid.*

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Crystals in Living Vegetables.—Various naturalists have taken notice of the appearance of crystals in the internal parts of vegetable tissues, but nothing very explicit and certain has been stated respecting them. M. Turpin has discovered, in the cellular tissue of an old trunk of the Cereus Peruvianus, in the Garden of Plants at Paris, where it had been growing one hundred and thirty years, an immense quantity of agglomerations of crystals of oxalate of lime. They are found in the cellular tissue of the pith and bark. They are white, transparent, four-sided prisms, with pyramidal terminations, collected in radiant groups.—*Jameson's Journal—Arcana of Science.*

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Botanical Garden of St. Petersburgh.—This enormous garden, containing about seventy English acres, is only part of it filled with plants: in 1828, one could walk under glass 515 arshines, each seven feet English, or in all, 3,605 English feet, or upwards of two-thirds of a mile. The *Ulex kuropæus*, or common furze, to see which growing in the open air, Linnæus is said to have, on his first arrival in England, knelt and thanked his Maker, is here confined to the Greenhouse.—*Edin. Jour. Nat. and Geo. Science.*